MAY 1955

VOLUME 31 | NUMBER 5

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Journal OF THE AMERICAN DIETETIC ASSOCIATION

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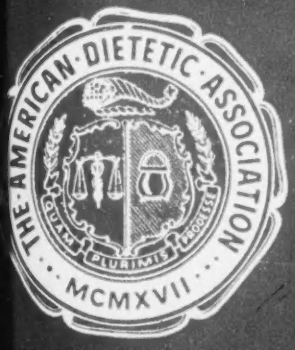

38th A.D.A.
Annual Meeting
St. Louis
October 18–21, 1955

Are You an Executive? — *Anthony J. J. Rourke*

Barriers to Leadership Development — *Verne J. Kallejian*

Together We Work — *Samuel M. Wishik*

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Vitamin D and Calcium Requirements — *Harold E. Harrison*

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The Journal of the American Dietetic Association is published monthly by The American Dietetic Association, Mt. Royal & Guilford Aves., Baltimore 2, Md., and 620 N. Michigan Ave., Chicago 11, Ill. Neither the Association nor the Editor assumes responsibility for the opinions expressed by authors of papers abstracted, quoted, or published in full in this Journal.

Subscription Rates: $6 per year in advance in the U. S., Canada, and countries of the Postal Union; all other countries, $7 per year in advance. Special rate to undergraduate students and dietetic interns in approved internships, $2 per year in advance, if order is approved by head of the department. Single copies 75 cents in advance. All correspondence concerning Journal subscriptions, orders for copies or reprints from the Journal, and notices of change of address should be sent to The American Dietetic Association, Mt. Royal & Guilford Aves., Baltimore 2, Md., or preferably 620 N. Michigan Ave., Chicago 11, Ill. Notices regarding change of address should reach the publisher by the *23rd of the month before the date of issue* on which the change is to take effect and both old and new addresses must be given. Claims for Journals lost in the mail will not be entertained more than six months after the date of the issue involved.

Editorial Correspondence: All articles and notices for publication, general correspondence, and inquiries should be sent to the Editor at The American Dietetic Association, 620 N. Michigan Ave., Chicago 11, Ill. Manuscripts are accepted for publication on condition that they are contributed solely to the Journal. Copy must be double-spaced and two copies, an original and one carbon, submitted.

Advertising: All correspondence concerning advertising should be addressed to The American Dietetic Association, 620 N. Michigan Ave., Chicago 11, Ill.

COPYRIGHT, 1955, BY THE AMERICAN DIETETIC ASSOCIATION Printed in U.S.A.

Entered as second-class matter June 30, 1925 at the Post Office at Baltimore, Md. under the act of August 24, 1912.

Published monthly by The American Dietetic Association

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Are You an Executive?[1]

ANTHONY J. J. ROURKE, M.D.

Hospital Consultant, New Rochelle, New York

TO paraphrase Thomas Paine "These are times which try men's executive abilities." We, in the scientific world, in the past few years have begun to realize the need for more than our scientific knowledge, in order to succeed in bringing good health to our nation. Somewhere recently I read the following: "Scientific facts are never established by unanimous opinion, no matter how democratic the process." Herein lie both the success of scientific research in America and the cause of many of our executive failures in science. We have never been impressed with popular acclaim in the field of science and have thus developed a generation of rugged individualists who base their hopes and efforts on the establishment of proved facts. In this area we think alone, we dream alone, and nearly always we come to conclusions alone. This discipline is at the opposite pole from that needed for administrative and executive functions—even in scientific fields.

Dietitians have blazed an enviable trail with the many advancements they have made in nutrition, the establishment of sound training courses in the field, and their continuing interest in research. It is beyond my power to add or detract from this marvelous record but, rather it is my opportunity to discuss needed improvement in one area of dietetics which has been neglected far too long. Courses in the training of dietitians are so crowded with the necessary facts and phenomena of science that little time is left in which to develop executive ability. I congratulate you on your farsightedness in devoting part of your convention program to this field. You need not hang your head because you are not satisfied with your abilities along this line. You are not alone, for we find the same problems existing in nursing, social service, medical education, and, in fact, in every area where men and women with specialized training in science are called on to administer programs.

An answer to the question, "Are You an Executive?" calls for much more discussion than a simple "Yes" or "No." To this might be added a "Perhaps," a "Maybe," or an "I don't know." In any event, our attention is attracted to the definition of an executive. Here I shall depart from the accepted custom of reading a Webster definition and let you look it up for yourselves. Instead, I shall discuss two aspects of an executive which I will describe as the *substance of an executive*, and the *methods of an executive*.

It is very simple to read books on how to be an executive and to listen to lectures in the same area. They nearly all deal with how you should tactfully bring to bear on others the necessary stimuli to accomplish the desired result. But before we get into this area, which I like to refer to as the "methods of an executive," I would like to deal not with your employees and co-workers, but rather with you.

SUBSTANCE OF AN EXECUTIVE

One wonders whether everyone can become an executive merely by desire. Looking at other fields of human endeavor, we see evidence that not everyone can become a singer, a violinist, a tennis player, a painter, or a pianist. I'm no expert in this field, but I assume that it takes an ear for music, a sense of rhythm, manual dexterity, an eye for color, or some other characteristic which, when lacking, prevents a person from reaching the desired goal, no matter how sincerely he tries.

What characteristics are necessary to make an executive? I wish it were as easily described as some attribute which could be measured by reading the notes of music, swinging a racquet with rapid precision, or harmonizing colors on a canvas. But alas, this is not the case; while there may be a common denominator among the characteristics in certain fields, such as sex, age, body build, or temperament, it is hard to find many characteristics possessed in common by good executives. They may be young or old, men or women, tall or short, heavy or light, introverted or extroverted; from all *outward* appearances, one can find little that would stamp the individual as an executive.

NEED FOR INNER SECURITY

There *are*, however, some characteristics which all good executives seem to possess. One is an inner

[1] Presented at the 37th Annual Meeting of The American Dietetic Association in Philadelphia, on October 26, 1954.

security which allows them to exercise the highest type of executive action without being hampered by doubts and fears. To the student of executive technique, an inventory of the best executives will always reveal this quality. They are popular, they are generous, they are kind, they are self-effacing, they display no fears, they are not competitive. On the other hand, many people who occupy executive chairs—because of the lack of this needed inner security—never have and never will truly succeed in that branch of any profession. Among your acquaintances you will find representatives of this group, and as I describe them, I trust you will not resent it as I put them under the lens.

They work long hours and find it difficult to get away on vacations. They tell you they are fearful that things won't be done if *they* don't do it themselves. They give you the impression that they fear for the security of the activity if they leave it even for a short time. They give you the impression that they are experts. But, let's look the situation over and see if this is true; I don't believe it is.

Rather, I think—whether they know it or not—that the security with which they are concerned is not the security of the job but rather their own personal inner security. These people seem to need a situation which is wholly dependent on them, and by thus filling the necessary position, they derive a satisfaction which is personal and which will always stand in the way of their becoming full-fledged and secure executives. They believe in dependency. Their jobs depend on them, and while this state of affairs goes on, they know that they are secure and thus consider themselves indispensable. Until they can switch their thinking to independence, they will always be shackled to a false theory which will impede their progress.

The true executive is an independent soul who believes in independence for himself and independence for the job that needs doing. He has enough confidence in himself that if tomorrow it should be necessary to change jobs, he could do it.

Now, as you look further for the people you feel make poor bosses or executives, you invariably find the next detriment to the expression of good executive talent, namely, jealousy. It is just another manifestation of insecurity. Jealousy constitutes a wall which prevents these executives from ever expanding to the limit of their talents. It is the factor which makes it necessary for them to do everything themselves, to represent their unit always, to make each decision, and otherwise fill their lives with so many minor details that no time is left to think, plan, direct, and follow up—which are the four main jobs of every executive.

NEED FOR FAITH IN OTHERS

Next you will find a group of so-called executives who tell you that times have changed. You hear from them such trite expressions as "People don't care any more"; "All they are interested in are the paycheck and a good time"; "I can't trust them with anything I want done"; "What is the world coming to?" and "The young people today are shiftless." To my way of thinking, these expressions are all evidence of the insecurity of the orator. By tearing down the young people of today and the departmental employees, the so-called executive has consciously or unconsciously built up something with which to compare himself and, needless to say, the comparison does well by the instigator of such ideas. In this comes the security which they feel they need.

I would like to dispel these fallacies about the young people of today and to say that we are turning out better and better people with each generation. It is needless to point out that each generation has improved life and life's ways with better and better education, tools, transportation, crops, and any other item you care to mention. In each case, the young folks of each generation were the ones who turned the trick which led to improvement. If civilization is "going to the dogs," one would see generations passing with no improvements taking place. To the best of my knowledge, this has never happened. It may be true that the young people today are working shorter hours, are doing less menial and unnecessary work than we did, but it doesn't mean that they are inferior in ability or loyalty to our generation. I'm sure the five-day week and the straight 8-hr. day may seem revolutionary to some of our brethren in the field of health, but the reduction to the six-day week and the 10-hr. day was undoubtedly also looked upon as a radical departure by some of our progenitors.

So, in addition to the sense of inner security, one finds in the good executive a strong faith in others, a faith which allows him to see the best in them and allows him to put their talents to the best possible use. This kind of executive never sets up a low standard of quality in others to act as straw men, only to be overwhelmed by his own superior attributes.

As a medical student many years ago, I was assigned to a hospital where I saw some deplorable obstetrics being practiced. On returning to the school, I talked with my professor about the great mistake in assigning students to that service, but he reminded me that I was impressed with the need for good obstetrics by observing poor practices. I trust you will forgive me for describing the poor executive rather than the good one in the hope that it may have some educational value for us.

NEED FOR SENSITIVITY

I will mention only one more trait which is lacking in the poor executive. This individual is completely lacking in his personal relations antennae. He is completely oblivious to the feelings of others. He couldn't

possibly conceive that others might have hopes, desires, feelings, loves, frustrations, or successes. To him, there are only two things in the world: first, the job that he supervises, and second, his ego which is wrapped up in getting that job done. How could anyone else possibly have any feelings? Nothing else matters. This lack of a sensitivity to the feelings of others will also tend to make such pseudo-executives lonely people, hemmed in by their own limitations and narrow concepts.

Therefore we see that, among many factors which must be contained in the substance of an executive, the following are major requirements:

(a) A sense of inner security.
(b) A feeling of independence.
(c) Complete lack of jealousy.
(d) A faith in others and in the future.
(e) A sensitivity to the feelings of others.

Before learning anything of the methods or mechanics of an executive one must have such substance, and it is well to learn early whether one possesses it. If he does not, he should not consider himself a failure, remembering that not everyone who wishes to fiddle becomes a Kreisler, or that not everyone who tries to sing becomes a Lily Pons. Failure occurs only when such an individual attempts to do something he long ago should have realized was impossible. Many an individual who is poorly equipped to do so is today occupying an executive chair. He is not only doing a poor job for his employer, but for himself, and, is thus missing an opportunity to carry on another activity for which he may be well equipped. As an individual worker, he would find much happiness in the products of his individual thought and action.

METHODS OF AN EXECUTIVE

You may conclude that if you possess the five points outlined, the going will be easy. Nothing could be further from the truth, for I know of no executive who has succeeded without working on the mechanics and the methods of executive function, for what it takes has not come naturally; it requires education and self-discipline.

Good executive management requires the following:

(a) A well defined *objective*.
(b) A well developed *plan* to reach that objective.
(c) *Standards* of performance of a proved nature.
(d) An appreciation of *human relations*.
(e) A good *communication* system.
(f) A system of *delegation*.
(g) A system of *follow-up* and evaluation.

Since space does not permit me to discuss these seven points in detail, I shall confine myself to a discussion of the function of delegation, which I believe to be one of the most difficult areas to master. In fact, many people have succeeded in proper delegation not by choice but by circumstances beyond their control. This we saw during the World War II when most administrators and executives were saddled with more responsibility than is customary during normal times. Because of this, they were compelled to look to others to carry out certain activities, and, through this force of circumstance, performed a necessary function of good administration, namely, delegation.

GOOD DELEGATION

What are the factors which work against good delegation in the normal program? There are many: a lack of security on the part of the so-called executive, lack of confidence in associates, bad habits cultivated early and never overcome, fear of associates, poor personal organization, feeling that he is losing status or power in allowing others to carry major responsibility, or the fear that he will lose control of his business or activity. Perhaps the most important reason for insufficient delegation by one who is qualified as an executive is ignorance.

Most potential and existing executives have little realization of the part they play or the part they could play in shaping the policy and activities of their unit. Within the hands of every executive lies the possibility of great action. All too often those hands fail to grasp the opportunity, and business goes on as usual. But, *does* business go on as usual? I'm afraid not. Like a tree, business grows from the bottom up, but dies from the top down. The executive must keep his unit alive by feeding it new ideas, by constantly looking for better ways, and by continuously experimenting. Only thus can he set the pace for his co-workers.

In the hospital world I have been impressed with the great importance some people place on purchasing and the many dietitians who feel this is a birthright and privilege to guard jealously. Such dietitians must spend hours worrying about such things when they have no time to spend in thinking, planning, or directing their personnel—a much more valuable commodity than much of the food that is purchased. I do not mean that the dietitian should not play a major role in setting standards for purchasing; I do feel, however, that she must decide early the things *she* must do and the things she can satisfactorily delegate.

While many of us find delegation a difficult task to master, once we have been willing to give up certain duties, we must then establish criteria before such responsibilities can be released to others. By proper selection of personnel capable of assuming new responsibilities, with good means of communications, with proper assignment of responsibility and authority to cover such responsibility, with a way of evaluating the work so delegated, with a loyalty in backing up your associates, and with a good yardstick for measuring performance, you have completed the process of delegation in a way which will work

and which will improve the operation of your department. Successful delegation is one of the thrills of executive work. First, you begin to realize a new sense of power which shows you the way of multiplying many times the pair of hands with which you had been trying to do so much for so long. In addition to this sense of power comes time for meditation and planning which results in eventual increased performance.

If you occupy the chair of an executive and are insecure, want to become indispensable, lack faith in others, are filled with jealousies, are insensitive to the feelings of others, and are unable to delegate, you may rest assured that you are an executive adolescent. Out of executive adolescence lead two pathways: you may successfully mature, or you may continue your adolescent methods and never grow up as a full-blown executive.

Your continued interest in the field of administration in dietetics is most encouraging, and I am certain that it will bear fruit. I am tempted to quote from my paper delivered before the American Dietetic Association when it met in 1953 in Los Angeles (1): "When the day comes that your executive ability equals your scientific knowledge, your profession will be secure. Until that day, you will be faced with a constant and unwelcome challenge." The challenge still exists and perhaps in no lesser degree than last year, but I am assured that you are rapidly becoming more able to meet it.

There is no easy high road to success as an executive. Neither is there an impenetrable forest between you and success. It can be mastered, it must be mastered, and the first step is recognizing this area, which you have done so well in your recent programs.

REFERENCE

(1) ROURKE, A. J. J.: The challenge to dietetics. Am. Dietet. A. 30: 132, 1954.

School Lunch Sanitation

Sanitary practices in school lunch programs were reported to a joint meeting of the School Health Section of the American Public Health Association and the American School Health Association last fall. A survey of 795 elementary, junior high, and senior high schools in towns and cities of all sizes and in all parts of the country indicated that 31 per cent of the schools were using one- or two-compartment sinks or dish pans for dishwashing and sanitizing. An installed dishwashing machine was found in 46 per cent of the schools, and an additional 19 per cent used three-compartment sinks. In the report, which was made by Dr. Charles C. Wilson and Eric M. Mood, Yale University, the authors speculated that, since "hot water in many schools is kept at lower temperatures than that in public eating establishments to prevent accidental burning of the children when they wash (themselves), it is doubtful if all 363 schools (46 per cent) with dishwashing machines had water at 170°F. for the sanitizing spray."

Only 58 per cent reported food displays "covered or shielded by glass or plastic"; thus in 42 per cent of the schools, a potential exposure of food to contamination existed. Thirty-six per cent of the schools had no way of knowing whether refrigerator temperatures were 50°F. or below as recommended by the Public Health Service, for they had no thermometers in their refrigerators.

Further potential health hazards were noted in the fact that almost half of the schools reported an insect control problem of some degree and that one out of every three had a rodent control problem of some degree.

With regard to the use of educational opportunities in the school lunch program, it was noted that some schools "give little or no consideration" to them. In only 56 per cent, for example, was it reported that handwashing with soap and water was required of the students before lunch.

Periodic sanitary inspection of school lunchrooms and periodic review of the way school lunches are used for educational purposes, preferably carried out cooperatively by personnel from the schools and health department, were recommended by the authors. "These activities," they said, "will point the way for further specialized investigation and provide the bases for improved programs of school sanitation and of school health education."

On the basis of this report, the Governing Council of the American Public Health Association, and the Council of the Association's School Health Section adopted a resolution urging "that schools and health departments in local communities cooperatively study sanitary conditions and practices in school lunch operations with a view to meeting optimum sanitary standards and making full use of the health education opportunities inherent in school lunch programs." The full report is published in the February 1955 issue (page 163) of the *American Journal of Public Health*. A similar report was also made to The American Dietetic Association at its Annual Meeting in Philadelphia last October.

Barriers to Leadership Development

Plogglies in the Kitchen[1]

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IF THE dietitian is to enhance the stature of her profession through the effective utilization of technical and administrative skill, it is necessary to provide the appropriate training. Essentially, such training has two aspects: (a) increased understanding of oneself and others and (b) the development of skill in dealing with face-to-face situations. It is this kind of training which enables a person to supervise subordinates effectively, work cooperatively with colleagues, and respond to the needs of clients and patients.

Any worthwhile attempt to initiate training for oneself or for others, whether it be in a formal program or conducted during the daily routines will inevitably encounter innumerable obstacles and barriers (1). Each of us has deep-rooted convictions about ourselves, our jobs, and the people with whom we work. Such convictions are not readily altered. Even for the person who is sincerely concerned about improving her own leadership potentialities, there are still numerous hurdles to overcome.

It is possible to identify some of these barriers to leadership development through analysis of the "ploggly," the semantic pitfall which can thwart our best efforts to solve problems (2).

In our efforts to deal with complex problems of social practice and human relationship, it has been necessary to use highly abstract terms. We discuss ideas and events with words which have become ambiguous. The unfortunate by-product of this process has been the emergence of the "ploggly."

We use the ploggly when we have difficulty in dealing with certain kinds of problems. It conceals prejudices, alleviates feelings of ignorance, and with it, we can deceive ourselves and often the other fellow into thinking that we know what we are talking about. *The important characteristic of a ploggly, however, is that it thwarts understanding.*

There are many types of plogglies which enter into the lives of dietitians, and it might be profitable to identify some of them.

GOOD-ADVICE PLOGGLIES

Perhaps the most common form of semantic pitfall in the leadership field is the "good-advice" ploggly. This ploggly is useful for writing articles and giving lectures. It is an all-purpose ploggly. We are told to be "stimulating," "inspiring," "positive," "objective," "good listeners," "understanding," "patient," and so on. Of course, almost everyone would agree that these little fellows are most attractive. The misleading nature of the good-advice ploggly can only be detected when one attempts to put such advice into action.

It is difficult to imagine how a conscientious dietitian would follow these instructions. She might have a long talk with herself about her lack of inspiring qualities, or she might agree to spend some time stimulating her colleagues. She might decide to be patient. However, it is doubtful whether such decisions lead to effective action. If we could do these things, we would have done so long ago. It may be that some people might profit from such good advice, but we cannot rely on such good-advice plogglies to train leaders.

DEAD-END PLOGGLIES

Another variety of ploggly is the dead-end ploggly, so called because it channels our thinking into blind alleys. This ploggly usually arises when we are baffled by the actions of those with whom we work. When patients fail to respond to our kindest efforts, when the physician appears oblivious of our activities or problems, when the nurse, housekeeper, or engineer disrupts our activities without apparent concern, or the administrator dissects a carefully prepared budget, it is then that we need blind-alley plogglies. How can we account for such errant behavior? We decide it is due to such things as "bad habits," "instincts," "neuroticism," "sensitivity," "ego," "irritability," "laziness" and so on.

[1] Presented at the 37th Annual Meeting of The American Dietetic Association in Philadelphia, on October 29, 1954.

These plogglies appear useful since they nicely define what we do not know. An area of ignorance can be neatly concealed. It is to be noted that these plogglies say a good deal about how we *feel* about the other person. They do not, however, tell us any more *about* that person than we knew before. Once we have decided that Mary is an only child, or sensitive, there seems to be little else that needs saying. Also, and most important, there is obviously nothing we can do about it. The dead-end plogglies have done their job, and another problem has been dismissed.

SACRED-COW PLOGGLIES

Of all the plogglies which creep into the kitchen, the most difficult to detect is the "sacred-cow ploggly." This ploggly serves a number of purposes. When we want to do things our own way and can't quite justify the action, this is the best place to use a sacred-cow ploggly. It can be used when questions are asked which raise embarrassing issues or difficult problems. It is also valuable when we want to give the other fellow a feeling that we have contact with some mysterious information which is beyond his ability to comprehend.

Every profession has such sacred cows. In the health field, we talk about "good patient care." There seems to be no procedure or scheme that can't be justified by this term. This is true, not because the term has no meaning, but because it has too many meanings. The main characteristic of the sacred-cow ploggly is that it can mean just about anything that one might wish. Such terms as "good nursing practice," "good medical practice," "good administrative practice," and perhaps even "good dietary practice" have meanings and implications which can be different for each person who uses them. It is for the members of each profession to evaluate their own sacred cows and to determine whether they facilitate or impede understanding and critical thinking.

WE-ALL-KNOW PLOGGLY

A more standard form of ploggly is the "everybody-knows" ploggly. The implication behind this ploggly is that everyone knows that such and such is true except the person being addressed. The "anybody-will-tell-you" ploggly has the same characteristic as the sacred-cow ploggly. It is most effective in stifling any further discussion or thinking. It is used primarily when questions are asked for which there is no justifiable answer. In general, "everybody knows" what "nobody knows."

USELESS-QUESTION PLOGGLIES

A special class of ploggly can be established for questions. Useless questions serve to convince everyone that you have done all that is possible, but are still willing to learn if anyone dares to attempt an answer. The kinds of questions which are asked about leadership problems are mainly determined by the kind of assumptions one makes about human beings. The greater the validity of the assumption, the greater is the probability of asking questions. Question plogglies are deceptive because they are so commonplace.

The "what's-wrong-with-him" ploggly takes many forms and is usually introduced by such phrases as the following:

What do you do with someone who . . . ?
Why doesn't he do what he's supposed to . . .?
What do you do when . . .?
Should you or shouldn't you . . .?
How do you get people to . . .?

Each of these questions sounds quite appropriate. We are so accustomed to them and use them so frequently that it is difficult to doubt their value. Yet in each case, answers to such questions tend to have limited value. They frequently take the form of a ploggly. For example, if one asks, "why does she act that way?" we then answer, "she is independent," or "she has bad habits and the wrong attitudes." Often, the answers are difficult to apply, or if they can be applied, they have limited usefulness. When one tries to answer the question, "what do you do with a person who . . .?" it often ends by the questioner explaining in great detail why the offered suggestions will not work.

This state of affairs occurs because such questions are usually the result of persistent efforts to meet situations which have failed. An attempt to answer such a question without first determining the cause of previous failures is likely to go astray. It is important to note that after many years of fruitless inquiry, many people stop asking questions entirely. Trainees become convinced that there is no way out, and training programs meet with considerable opposition.

Often such questions stem from simple annoyance with the unpredictability of human beings or adherence to faulty generalizations about human nature. Commonly held generalizations which espouse useless question plogglies can be phrased as follows:

. . . People can't change. People are by nature vicious, mean, and self-seeking and nothing can be done about it.
. . . There is something wrong with people who do not think or act the way I do.
. . . People are the same in every situation. If a person is difficult to get along with, he will always give trouble on the job.
. . . The more important you are, the greater the number of people who will look to you for guidance and wisdom.
. . . People want only one thing—money; the more money you pay them, the more work they do.

. . . There are two ways of doing things, the right and the wrong way, and the job of the supervisor is to see that people do it the right way.
. . . One person can make decisions faster and more efficiently than a group of people.
. . . Jobs are more important than people.

The useless-question ploggly can be defeated if a trainee can be encouraged occasionally to ask, in addition, the following kinds of questions:

What is it that I do that makes people reluctant to take orders from me?

Why do I have trouble dealing with certain kinds of situations?

Why do I have difficulty in understanding certain kinds of people?

What can I do to improve my relationships with people so that they will talk more freely with me?

How can I help employees satisfy some of their expectations from working in this department?

The important characteristic of this kind of question is that the answer provides a basis for action. If the trainee can identify her own contribution to the events which occur, the possibility of taking effective action is increased.

As trainees learn to ask an occasional question of this kind, there tends to be a corresponding alteration in the basic assumptions they make about people. The assumptions which appear to be most conducive to the development of leadership can be stated as follows:

. . . Human nature *can* change; under the proper conditions, many individuals can develop their capacity and potentialities.
. . . Each individual is unique. No two persons are completely alike, yet no one person has experienced emotions which have not also been experienced by every other person.
. . . People react differently in different situations and with different people. We are a multitude of selves.
. . . The more important a person is, the more he can be concerned about the welfare of someone else.
. . . People work for many reasons. The more closely a person's satisfaction is related to the goals of the hospital, the more effective he will be as a member of the organization.
. . . There are many ways of doing things efficiently. The job of the supervisor is to bring about the best integration of personnel and equipment in a given situation.
. . . When people make decisions together, there will be better decisions and will be carried out with greater efficiency.
. . . People are more important than jobs.

CONCLUSIONS

Increasingly, the professional worker is being called on to be an effective leader. No other type of training is as difficult to acquire, or so persistently demanded.

For the hospital dietitian, these usual demands are further intensified. The numerous horizontal and vertical stratifications among hospital personnel raise formidable communication problems. The increased dependency need of patients with the associated reluctance to deviate from established dietary patterns can create considerable stress.

Most people feel quite competent to criticize another's cooking at the slightest provocation. It often seems as though any annoyance which a patient experiences is expressed toward the most familiar aspect of his environment, the food service.

A deeper understanding of human relationships seems to be one of the important steps in training leaders. Persistent analysis, evaluation, and discussion of the barriers to understanding can produce results. If we deal with forces which create and maintain the ploggly, its destructive influence can be defeated.

It may be that we can never completely eliminate the plogglies from our kitchens, but a vigilant campaign can teach us to move cautiously when they enter our front doors.

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Canned Fresh Milk

The day of long-dreamed-of canned fresh milk may be close at hand. In order to can or otherwise store whole milk, which is a culture medium, it is necessary to kill the bacteria before they breed and turn the milk sour. "The trick," according to Dr. Harry E. Gunning, Illinois Institute of Technology, "is to preserve the milk without altering its delicate taste characteristics or nutritional properties."

At a recent meeting of the Chicago Section of the Institute of Food Technologists, Dr. Gunning, reported that approximately 3 billion bacteria per cubic centimeter of milk were destroyed in recent experiments using mercury-in-gas resonance radiation. Ordinarily, when milk is irradiated with either ultra-violet light or radiations from nuclear reactors or multi-million volt X-ray and cathode ray machines, flavor side-effects are encountered. By using the simpler system of resonance radiation, the basic cause of off-flavors may one day be discovered. The new method not only offers a better method of storing milk, but is cheaper than nuclear irradiation.

Together We Work[1]

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THAT various directions of "working together" can be taken by the professional worker is generally recognized. In the accompanying diagram, these directions have been indicated. The professional worker is the hub of the wheel; on the periphery are the various people with whom he or she must have communication: administrators, colleagues, consultants, individual clients, large groups, and small groups. These aspects of communication will be considered in turn.

THE ADMINISTRATOR

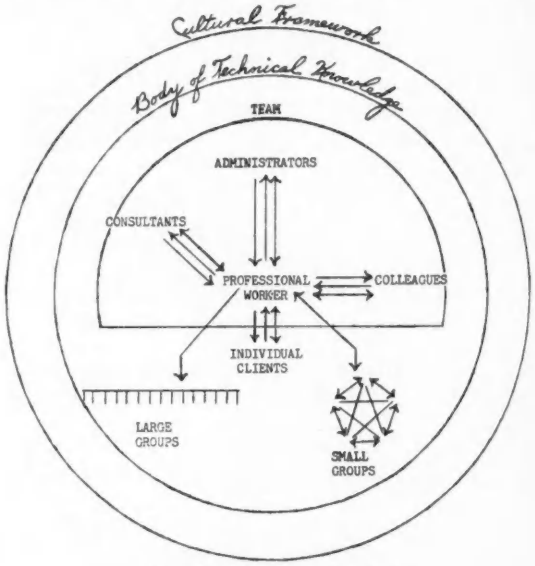
In respect to relationships between the professional worker and administrators, much emphasis has been placed on the value of the two-way give-and-take. The importance and emphasis on this phase of the relationship should not, however, minimize the value under certain circumstances of one or another direction of communication being given greater emphasis. It will be noted in the diagram that there are three arrows, only one of which is two-way. Too many people have developed a distortion of the concept of democracy so as to preclude the use of authority. In a specialized society such as ours, appropriate use of authority by the administrator and the contribution of information by his subordinates both have an important place in effective working together.

TEAMWORK

In the same way, the relationship between the worker and his colleagues, whether they are in the same or different disciplines, can be of three possible types. Only one is shown on the diagram to have dual direction. In recent years, we have come to abuse the concept of teamwork so as to give emphasis to the method rather than the objective. What is a good team on the football field? Is it the one who shows dexterity and precision of play or the team that scores points? A staff of professional workers can get along harmoniously and happily, keeping each other well advised of developments and holding conferences at every opportunity, but end up by accomplishing very little.

[1] Presented at the 37th Annual Meeting of The American Dietetic Association in Philadelphia, on October 26, 1954.

I recall one situation in which a three-year-old child attending a nursery school was still taking a bottle of milk to bed at night. It so happened that the nursery teacher, the public health nurse, and the nutritionist had all become involved in discussing this matter with the mother. Not only was there duplication and confusion, but when they learned of each other's participation, each resented the other's trespassing on her domain. Which one was the most appropriate person to carry the responsibility? I don't know. There is no single formula. Each was competent to discuss the question, since it fell ap-



Wheel of Communication

propriately within the purview of all three of the disciplines in their broad approach to the education or health of the child. At least they could have gotten together and decided which one should carry the ball.

A good team is one on which each member knows both the capacities of the others and the requirements of the problems they must face. Each tries to identify the member of the team best fitted to

handle a given situation. Sometimes the best teamwork is displayed by passing the ball or by running interference, or sometimes by carrying the ball yourself. Each member of the team is not working primarily to carve a niche for himself. The successful nutritionist on a team is one who has passed information and attitudes to the others so effectively that they can apply them themselves and feel free to do so rather than feel the need to call upon her on every occasion. I am not sure that two heads are always better than one—certainly not if the two heads are bowed toward each other in an Alfonse-and-Gaston manner out of supposed deference for the other's opinion. If you've ever tried preparing a draft of a statement with six authors instead of one, I think you know what I mean.

Another part of teamwork is the follow-through. When a member of the team has done his part in a given play, the coach does not permit him to relax until the play is completed. He must remain involved uutil the referee's whistle is blown, to indicate that the ball is dead.

Shortly after the liberation of the Philippines from Japanese occupation, I found myself desperately ill in a hospital in Manila. When it became possible for me to take food, the doctor insisted that I have a soft-cooked egg three times a day. For the next few days, no soft-cooked egg arrived on my tray. I complained. Finally, the dietitian came to see me. She was very angry at me for complaining because she herself had put the eggs on my trays. We learned that in that stage of demoralization of the city, even a soft-cooked egg was not immune to thievery between the kitchen and the patient's bed.

Do I imply by this story that we must be checking on each other constantly, that we cannot rely on our colleagues? No. But we do owe it to ourselves and to each other to learn by experience what actually does happen rather than to rest on theoretical objectives or a written manual of procedures. Each of us should at least do a sampling of the situation from time to time. After all, I, the patient, and the hospital nurse both thought that the nutritionist had not put the eggs on my trays, and each party in the situation was maligning the other until we got together.

I recall years ago, when I was in charge of a hospital nursery for newborn infants, that I made daily rounds on the maternity floor to help me in my responsibility to the infants. People on the obstetrical service wondered why a pediatrician didn't stick to his knitting. If anything didn't work out, they would let him know. Fortunately, since those days, we have come to recognize that the cutting of the umbilical cord does not completely separate the mother and baby, either for hospital administrative purposes or for any other reason. We cannot work effectively as colleagues if we do not become involved together in working with and solving specific problems and difficulties.

WORK WITH CONSULTANTS

The diagram shows another member of the team —the consultant. The importance of the two-way arrow in the consultant relationship has been given full emphasis in recent years in various professions, including nutrition. A case in point would be the dietitian who visits the nursery school to advise the teacher on the meal schedule for the children. The teacher complains that the children don't feel like eating at mealtime. The dietitian suggests that they may not have been given sufficient time to become hungry and that perhaps the meal should be given later in the day, but the teacher says that the children droop, that they are tired at mealtime, too tired to eat, she thinks. Between them they recognize something that perhaps is not generally understood —that if the pre-school-age child is allowed to play until he expresses an interest in food and feels hungry, he will usually be fatigued before that time arrives. The solution in this situation was to give the meal earlier rather than later, with the result that the children were in better spirits, less fatigued, and more interested in their food.

However, in giving due emphasis to the importance of the two-way process in the consultation, we should not weaken the single-headed arrows in either direction. The consultant should not be averse to bringing specific knowledge and information to the consultee. This is made more difficult for dietitians and nutritionists because they often work in another setting than their own. They must, therefore, adapt themselves and translate their ideas into the terms of the context in which they find themselves, such as a school or hospital. Most other professional groups usually have the comfort of working within their own setting.

INTERVIEWING INDIVIDUAL CLIENTS

As shown in the diagram, the professional worker can relate to his clients as individuals or in groups. When working with the individual, three patterns of direction are again possible—each of value in one or another situation. The single-directioned arrow from worker to client might best meet the needs of the mother who is comfortable in an orderly world and wants a schedule for feeding her baby, so that she will know what she will do at certain times of the day, when she can go shopping, and so on. The worker should give her such a schedule, even perhaps seem to impose a schedule upon her. This mother could not possibly be comfortable in a free, self-demand regimen.

At times the arrow may be almost entirely in the other direction. The client may need to express her feelings freely, a sort of catharsis, and the worker may realize that this is no time to inform, teach, or advise. Take, for example, the mother who is worried about whether she should breast-feed her baby. She may have said that she would because it will

please her husband, or she may have decided not to for reasons that she cannot herself quite understand. She knows that the problem bothers her and she just must talk it through until she herself comes to a decision. She may or may not indicate a need for support in making that decision.

Sometimes simply listening to a one-way discourse by the client gives us a better picture of the individual than an interview in which we had participated more fully. By listening, nutritionists can find that there are two kinds of people in the world; those who, when they wake up in the morning, aren't any good and can't be talked to until they've had that cup of coffee and breakfast, and the other kind who don't feel like eating first thing and must be awake for an hour or so before they develop an appetite. This determines not only how the dietitian sets her program, but sometimes how husband and wife get along at home.

Yes—there are two kinds of people in the world, the conservative eaters and those who are the explorers. One or the other characteristic may start way back in childhood. When a boy grows up, I'm not sure which one is easier on his wife. In trying to interest the child in new foods, if he's the conservative type, the new dish should be made to resemble food which is already familiar to him. If he's the exploring type, the new dish can be quite different.

Yes—there are two kinds of people in the world. One kind, when faced with a plate of meat, mashed potatoes, and green peas, will take a mouthful of each in definite rotation until the plate is finished. The other type will eat all the potatoes first, then all the peas, and then all the meat. Trouble develops when the child is one type and the parent is the other, because the parent tries to impose his pattern on the child. As a dietitian, knowledge of the two approaches may help you to decide whether the vegetables should be served in side dishes or placed all together on a single platter.

The give-and-take interview between the worker and the individual client, represented by the double-headed arrow, helps the professional person to get down to the minute details that permit solution of a problem. For example, a mother says that her baby cries. She thinks his food disagrees with him. Why does the baby cry? You can't find out unless you have more information. If he cries immediately after a feeding, he probably wants more. On the other hand, if he falls asleep contentedly after a feeding, but wakes up crying long before his usual next feeding time, he apparently had enough quantity but not enough concentration of milk formula to hold him. Then again, if he cries midway between feedings, he's probably thirsty. If he cries at a different time each day, that's one thing. If he cries consistently at the same time each day, that gives you another clue. The minutiae of the situation which come out in the give-and-take interview promote effective counseling.

LARGE GROUPS

The diagram shows that the professional worker can reach clients in large groups, such as through lectures or demonstrations. This is primarily a one-way relationship, with the contribution of the worker dropping on the audience—like gentle rain from heaven! There may be a little return flow. A speaker can tell when an audience is responding to his efforts at humor, and he can see here and there somebody sleeping in the audience. But by and large, the communication is in one direction.

Again, a word of caution. We should not decry the value of the one-direction relationship between the worker and large groups. There is a place for it. But, like every other effort, it needs working at to be successful. It takes designing. Too many lecture presentations are failures because the lecturers have not given full consideration to the interests of the audience, and the presentations have not been designed carefully as to method, content, and clarity. Sometimes a gimmick helps, such as the accompanying diagram which was placed in the hands of the audience when this paper was given orally.

SMALL GROUPS

I'd like to say a few words about the professional worker and small groups. Here the diagram shows the strong interplay within the group and points up what we already know, that clients are often influenced more by their peers than by us in a professional capacity. For example, when I was taught pediatrics in medical school, we were told that the greatest danger in infant feeding was over-feeding. I have since learned (and I've learned this from mothers and from babies) that, except for premature infants, it is almost impossible to over-feed a baby. I recall a group of mothers who were discussing this question. One said that if she tried to force another ounce on her baby after he had had enough, he wouldn't take it. If she still forced it into his mouth, he'd spit it back. She couldn't over-feed her baby by giving him more quantity at a feeding. Another mother said that if she tried to wake her baby an hour before he seemed ready, he would be very hard to wake up, would be drowsy, take very little food, and go right off to sleep again. She couldn't over-feed him by trying to place his meals closer together. A third mother told that at one time in her anxiety, she put more evaporated milk and less water into the formula. She thought a richer mixture would be better for her baby. He simply took less of the formula than he had before, and an hour later cried for water so that he could dilute it in his stomach. She couldn't over-feed him by trying to make the formula too rich. The fourth mother thought she would help her baby by adding sugar to his formula. The baby developed diarrhea and became sick. In a sense, she had over-fed by giving an imbalanced mixture. These mothers agreed that, except for such bizarre

or unreasonable efforts, the baby cannot be over-fed.

On the diagram the arrow between the professional worker and the small group points in both directions. The participation of the professional person in group discussion is one of the best means of education. It permits the professional person to listen while the clients address their opinions toward each other in a way that is more revealing and often more honest than when they might be speaking to or trying to please the professional worker.

TECHNICAL KNOWLEDGE

On the diagram we show that the work of the team takes place within several concentric orbits. The inner orbit labeled the "Body of Technical Knowledge" implies that the worker must keep informed on new developments. Information obtained from research should sift down to the team for prompt application, and observations made by the team should be made available to the researcher for use and incorporation into his investigations.

The professional worker also must keep pace with developments in other disciplines as well as his own and must think of factors collateral to his own specialty. Nutrition and dietetics have done very well in this respect in recent years, for instance by keeping pace with and trying to apply the findings of psychiatry and pediatrics.

CULTURAL FRAMEWORK

The outer orbit is the "cultural framework" in which the professional person works. Although few professions have given as much attention to cultural elements as has the field of nutrition, we must constantly remind ourselves of their importance. I recall in the Hawaiian Islands seeing a number of babies with manifest rickets. Not understanding how this could happen in the land of endless sunshine, I asked some of the mothers of Japanese extraction whether they took their babies out into the sun. The usual answer was, "No, he'll get too dark." Here, the cultural striving for a light complexion was sufficient to prevent the child from getting his vitamin D requirements.

In a study with which I was once associated, an attempt was made to understand what made mothers force food on their youngsters. Mothers from certain ethnic groups forced food because it was considered desirable to have a large baby; others because it was the custom to give large amounts of certain food items; and a group in the lowest economic level followed the pressures of commercial advertising and used the forcing of food as an indication of keeping up with the Jones's. The handling of the situation depended on understanding the motivations.

The relationship of nutrition to culture is more than merely making allowances for the cultural factors. It includes helping to build and prepare a child for adult citizenship. In this, eating makes its contribution. The child learns about our concepts of democracy and ethics through his meals. We are not concerned in the very young child about table manners, but soon we are able to tell him that he shouldn't talk while his mouth is full. Thereafter, he begins imitating his elders. The family dinner hour can be a time when many parts of a child's code of ethics and behavior are developed through examples. Courtesy, sharing, consideration for others, respect for elders, self-discipline, patience, sense of responsibility, and participation—all are exemplified in passing the food, requesting the salt, waiting one's turn, helping and planning menus, preparing and serving the meal, setting and clearing the table, or doing the dishes. Even prejudice and bigotry can be fought through meals. I know one family that makes a point of studying dishes of different countries and having the children share in their planning and preparation. This is done together with other readings and discussion of interesting habits and customs of peoples of other lands. When possible, the picture is completed by eating out at restaurants which serve dishes from other lands or at the home of friends from a foreign country. I am sure that some of you have in similar fashion made your contribution to the part of your school's curriculum that is concerned with learning about our fellowmen.

CHANGING CONCEPTS

In working with our clients, we must be careful of the sudden sharp shifts in our own opinions and teachings. We all can recall such changes that we have gone through. Each time we know what was wrong with our previous methods and we feel quite sure that our present way of doing things is correct. For many years, cod-liver oil was given to children because it seemed to help them to grow better. Then someone discovered vitamin D in cod-liver oil and was able to produce it in concentrated form. Viosterol appeared on the market. Immediately, it was hailed as the equivalent of the essential elements of cod-liver oil. Because it was rather expensive at first, only the wealthier families were able to give their children the benefit of viosterol. The lower economic groups had to continue with whole cod-liver oil. After a time we discovered that cod-liver oil also contained vitamin A and that the wealthier children had missed out on this. Well, we corrected that, or so we thought. We produced viosterol with haliver oil so that we could give the A and the D together.

Within the past two decades, we have also seen the abrupt shift from the rigid scheduling of child feeding to the permissive approach. One mother said that her first child's feeding was controlled by the pediatrician and the clock; the second child was master of his own routine as well as that of the rest of the family. On the third child, the parents are taking over. This story may help to answer another question that may come to mind. Are we sure that

we are not making the same mistakes all over again? We're teaching parents something different. Are we not likely to find ourselves wrong again? I believe our shift is different in certain respects. We are trying to avoid imposing specific instructions on parents. We try to give them the facts as we see them. We'd like to interpret a framework for those facts, such as helping the mother to understand something about the growth and development and behavior of children, and then have the parents find their own flexible solutions. We are emphasizing that the parent being comfortable in the solution may be more important than other indices of success.

Another important element of our present attitude is avoiding being Pollyannas, that is, always playing up the favorable side of things. Parents of a first child ought to be told that the first weeks at home are very difficult more often than easy, that the self-demand routine by which we like to see a new baby find his feeding rhythm may be very hard to live with at first. A person being placed for the first time on a diabetic regimen or a low-sodium diet ought to be told in advance that it's going to be hard, not easy. I don't think we gain anything by soft-pedaling in advance, because the realization only becomes more bitter for the client.

You may say that my statements sound as if we should aim at a certain psychologic goal regardless of the facts—that we are distorting the facts. "You can't argue with facts," you will say, "they speak for themselves." Well, facts don't give us trouble. It's what we decide to do because of the facts that gives us trouble. For example, if you decide what the daily caloric requirements of children are, you may conclude that it is necessary to force food on the child to attain those requirements. On the other hand, you may develop a permissive approach with the child's being given a chance to make many of the decisions. The caloric requirements—the facts—are the same, but the method of reacting to them is different. You may have heard the story of the elderly professor of economics who had a visitor in his office and showed him a set of examination questions. He said, "This is the examination I have given my students each year for the past twenty years." The visitor was astonished and asked whether the professor didn't realize that the students from one year to the next would alert the next class to the questions that would be given. And the professor said, "That doesn't matter, of course they do it. The questions are the same from year to year but the answers are different." The same facts can be used for opposite goals with little difficulty.

SUMMARY

In closing I'd like to refer to an article by a psychologist, Dr. Robert White, called "The Dangers of Social Adjustment" (1). He pointed out that we have recognized the values of children socializing, playing with other children, to the point where we are afraid to permit a child to enjoy the pleasures and benefits of solitude. Similarly, I have tried to point out that we realize the values of democratic action and of group dynamics, but in looking at the two-headed arrow that we seek in the interaction between persons, we sometimes forget that each of the two points of the arrow must indicate the passing of something in that direction. The results of group action are not some new kind of a cosmic ray that develops independently of what each member brings to the group. Each individual must still work toward making a contribution. Each professional worker must find for himself a balance between his role as an individual and as a member of a team.

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Second International Congress for Dietetics

The Second International Congress for Dietetics will meet in Rome during the week of September 10, 1956. American dietitians are urged not only to attend, but to contribute to the program. Papers for reading at the Congress will cover the following topics:

Research in dietetics (the role of the dietitian)
Routine administration of therapeutic diets as modifications of the normal diet
Problems of food production, organization, and layout of the dietary department
New trends in the dietary education of the nurse and dietitian

The program committee is soliciting papers on the above subjects and welcomes suggestions and proposals for consideration and selection. Abstracts of proposed papers, not to exceed 250 words, should be prepared and submitted to the Editor of the JOURNAL OF THE AMERICAN DIETETIC ASSOCIATION not later than October 1, 1955. All such abstracts should be clearly labeled "Proposed paper for reading at the Second International Congress of Dietetics." On the basis of these abstracts, final selection of papers to be included on the program of the Congress will be made by a program committee.

Papers should be read in person at the Rome meeting. They may be read in English, as simultaneous translation will be available.

Efficiency of Cooling Practices in Preventing Growth of Micrococci[1]

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THIS investigation was carried out to demonstrate the dangers accompanying slow and inadequate cooling of cooked foods stored in thick layers and subjected to various cooling methods, and to correlate the rates and degree of cooling with multiplication of "food poisoning" micrococcus.

Staphylococcus-caused gastroenteritis, which is considered to be the most common type of bacterial food intoxication, frequently follows the consumption of certain types of food prepared hours before serving and stored in relatively large quantities.

Jensen (1) reported that food poisoning micrococci will produce gastrointestinal irritants at temperatures between 15.6° and 46.1°C. (60°F. and 115°F.) in 4 to 8 hr., depending on how rapidly the bacteria grow in a particular type of food. He advised providing a safety margin by considering the growth danger zone to be from 10° to 49°C. (50° to 120°F.).

Dack (2) stated that enterotoxins were demonstrable in a culture of *Micrococcus pyogenes* var. *aureus* grown three days at 18°C. (64.4°F.). Enterotoxins were not manifested in cultures grown at 15°C. (59°F.) for three days or at 9°C. (48.2°F.) for seven days. Failure of this food-poisoning strain to produce enterotoxins at the two lower temperatures was attributed to poor growth.

Black and Lewis (3) studied the effect of several methods of cooling cooked foods on bacterial growth. They divided the cooling periods into three separate temperature ranges: 82° to 66°C. (180° to 150°F.), 66° to 46.1°C. (150° to 115°F.), and 46.1° to 21.1°C. (115° to 70°F.). The interior of masses of foods refrigerated while still hot cooled at a faster rate than the interior of foods cooled at room temperature and then refrigerated. The time refrigerated foods remained within the growth danger zone for food-poisoning bacteria was lessened by refrigeration of the food before its internal temperature dropped to 46.1°C. (115°F.).

Lewis and associates (4) demonstrated that the time required for large volumes of chicken salad to cool below the minimum growth temperature of *Micrococcus pyogenes* var. *aureus* was related to the shape of the container. They suggested that chicken salad prepared in large quantities should be stored in thin layers in flat pans rather than in deep containers.

According to these investigators, the large amount of handling involved in preparing chicken salad makes some bacterial contamination inevitable. This accidental inoculation often resulted in a bacterial count as great as when larger quantities of inoculum were added to the original sample. Their data indicate that there is danger in even a small amount of bacterial contamination, if the temperature and incubation time favor growth of food-poisoning bacteria.

PROCEDURE AND EXPERIMENTAL RESULTS

Each experiment was performed in triplicate, that is, on three different days, and all graphs and bacterial counts represent an average of three recordings.

Experiments A and B were done in an isolated room kept locked at all times, since the pie filling was inoculated with food-poisoning micrococci.

Thorough disinfection was carried out after each experiment, and bacterial analyses were conducted in the Department of Bacteriology in a different building.

Experiment A

Cream pie filling consisting of milk, sugar, cornstarch, egg yolks, salt, butter, and vanilla was prepared according to the recipe of Fowler and West (5). The pie filling was cooked in a steam-jacketed

[1] Contribution No. 302, Department of Bacteriology, and No. 183, Department of Home Economics, Kansas Agricultural Experiment Station, Manhattan. Supported by a grant from the U. S. Public Health Service, Federal Security Agency. Received for publication October 4, 1954.

[2] Present address: Wesley Hospital, Wichita, Kansas.

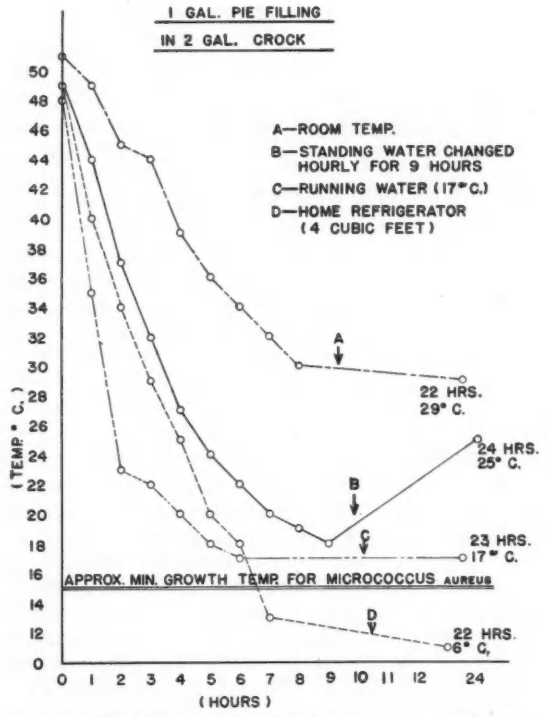

FIG. 1. *Cooling rates of 1 gal. lots of cream pie filling in 2-gal. crocks stored under four conditions. Center temperatures were recorded hourly for 9 hr., then at 22 and 24 hr.*

kettle until the temperature reached 85°C. (185°F.). It was transferred to a large crock and cooled to approximately 50°C. (122°F.) by stirring for about 30 min. in a stream of cold air. The cooled filling was dispensed into four 2-gal. earthenware crocks (8 lb. 8 oz., or approximately 1 gal. to each crock). The contents of each crock was then inoculated with approximately 25,000 cells per gram of a known food-poisoning strain of *Micrococcus pyogenes* var. *aureus*, followed by thorough mixing to distribute the inoculum uniformly.

A thermometer was suspended in the center of the contents of each crock and the containers were stored as follows:

(a) In a 16 by 18 by 7 in. sink containing 5 gal. tap water at an initial temperature of 17°C. (62.6°F.). Water was changed hourly.

(b) In an identical sink containing running water adjusted to remain approximately 4 in. deep. The water temperature was 17°C. (62.6°F.).

(c) In a 4-cu.-ft., home-style refrigerator at 5°C. (41°F.).

(d) At room temperature, approximately 28.9°C. (84°F.).

Temperatures of the filling and the refrigerator were recorded hourly for 9 hr. and at 22 to 24 hr. Plate counts were made on Chapman's mannitol-salt agar at 8 and 24 hr.

TABLE 1

Plate counts of Micrococcus pyogenes *var.* aureus *inoculated at the rate of 25,000 cells per gram filling in 1-gal. lots stored in 2-gal. crocks under different conditions and temperatures*

CONDITIONS OF INCUBATION	PLATE COUNT	
	9 hr. after inoculation	24 hr. after inoculation
	million/gm.	*million/gm.*
Storage in home-style refrigerator held at 5°C. (41°F.)	2.5	2.6
Crock held in running water, 17°C. (62.6°F.)	0.7	100.0
Crock held in standing water, changed hourly for 9 hr.	6.0	300.0
Holding at room temperature, 29.9°C. (84°F.)	78.0	700.0

The filling in the crock partially immersed in running water cooled most rapidly during the first 5 hr., followed by the filling stored in the refrigerator. The crock of filling standing in water changed hourly for 9 hr. cooled almost as rapidly the first few hours as that stored in the refrigerator (*Fig.* 1). The temperature of the refrigerator increased from 4°C (29.2°F.) to 9°C. (48.2°F.) during the first hour after the warm filling was placed in it, then decreased to 7°C. at the end of 2 hr.

As shown in Table 1, plate counts of *Micrococcus pyogenes* var. *aureus* (initial inoculum 25,000 cells per gram) in pie filling cooled 9 hr. in running water, in the refrigerator, in standing water, and at room temperature were: 700,000; 2.5 million; 6 million; and 78 million per gram, respectively.

No abnormal odor was noted in any of these samples at this time, and despite the high microbial count for the filling stored at room temperature, the product would probably have been acceptable for consumption, although no taste test was made.

At the end of 24-hr. storage, the corresponding plate counts of *Micrococcus pyogenes* var. *aureus* per gram of filling were: running water, 100 million; refrigerator, 2.6 million; standing water not changed after 9 hr., 300 million; and room temperature, 700 million.

The filling stored at room temperature was definitely spoiled, as evidenced by a pronounced "off" odor.

Experiment B

Hot cream filling weighing 25½ lb. was placed in a 4-gal. crock and allowed to cool at room temperature 9 hr., then stirred until the temperature dropped to approximately 50°C. (122°F.). The filling was inoculated with approximately 25,000 cells of *Micrococcus pyogenes* var. *aureus* per gram and immediately placed in a 4-cu.-ft., home-style refrigerator, the temperature of which was 5°C. (41°F.). Temperatures at the center of the filling were recorded at 9 and 15 hr.

Fifteen hr. after inoculation, the mass of filling was thoroughly mixed and a 250-gm. sample removed for plating on Chapman's mannitol-salt agar.

The temperature at the center of the filling dropped from 50°C. (122°F.) to 25°C. (77°F.) in 9 hr. and to 20°C. (68°F.) in 15 hr.

Fifteen hr. after inoculation, the average plate count of the *Micrococcus pyogenes* var. *aureus* was 77 million per gram.

The refrigerator temperature at this time was 10°C. (50°F.) or 5°C. (9°F.) above the temperature at the beginning of the cooling period.

Experiment C

This study was concerned with the effect of the type of container and the size and type of refrigerator on the cooling rate of 25½ lb. cream pie filling. Two samples of filling were prepared as previously described and placed, at a temperature of 85°C. (185°F.), in each of two types of containers, namely a 4-gal. crock and a 4-gal. enamel container and stored as follows:

(a) One crock and one enamel container at the rear of a 472-cu.-ft., walk-in refrigerator, cooled to approximately 4°C. (29.2°F.) by forced air.

(b) One crock and one enamel container in a 15-cu.-ft., reach-in refrigerator cooled to approximately 4°C. (29.2°F.) with forced air. The 2 by 2½ by 2 ft. reach-in area was one division of an eight-compartment refrigerator divided with walls of wood. This refrigerator was used to store fresh and canned fruits, jellies, jams, and so on. Supplies were withdrawn or replaced at frequent intervals, so that the temperature was subject to fluctuations.

Temperatures at the center of the filling were recorded hourly for a 12-hr. storage period. To simulate a 24-hr. continuous reading, comparable containers were similarly stored for 12 hr., then temperatures were recorded hourly until the 24-hr. period had elapsed. The filling was not inoculated since the containers were stored with food destined for human consumption.

As shown in Figure 2, there was little difference in the cooling rate, whether the filling was stored in a crock or an enamel container. The filling stored in the reach-in refrigerator remained at a higher temperature for a longer time because the temperature of the smaller compartment increased when the hot filling was placed in it; probably, also, the heat was not dissipated so rapidly as in the walk-in cooler. The compartment remained near 11°C. (51.8°F.) while the filling was cooling.

Center temperatures of the filling in the walk-in refrigerator remained above 15°C. (59°F.) (approximate minimum growth temperature of *Micrococcus pyogenes* var. *aureus*) about 16 to 19 hr.; center temperatures of the filling in the reach-in refrigerator did not go below 15°C. (59°F.) in the 24-hr. period.

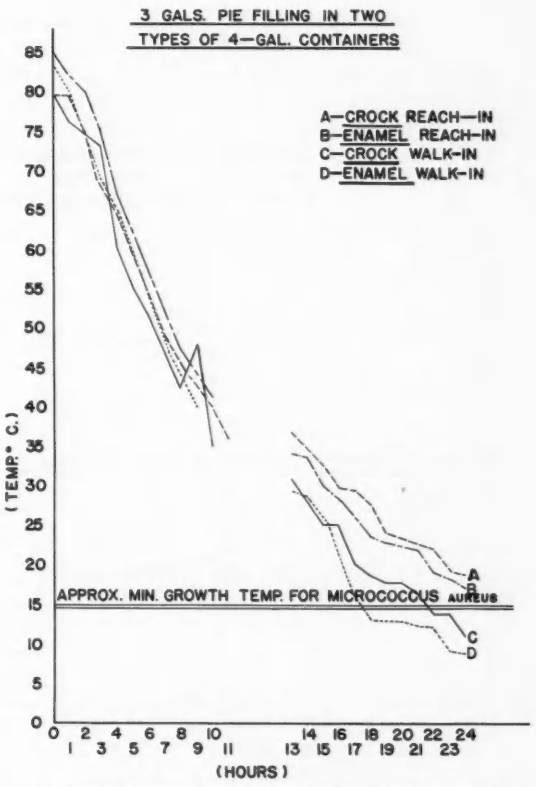

FIG. 2. *Cooling rates of 3-gal. batches of cream pie filling stored in two types of 4-gal. containers stored in a walk-in refrigerator and a compartment of a reach-in refrigerator. Center temperatures were recorded hourly for 24 hr.*

Experiment D

Potato salad was prepared according to the recipe of Fowler and West (5), and the two methods of handling the ingredients were used. In Method I, the ingredients were prepared and held under refrigeration for 12 hr. before being combined. In Method II, the ingredients were prepared and combined immediately.

A total of 42½ lb. potato salad was prepared (17 lb. by Method I and 25½ lb. by Method II), divided into five 8½-lb. lots, and stored in the following manner:

(a) Chilled potato salad in a 2-gal. crock in a 4-cu.-ft., home-style refrigerator 5°C. (41°F.).

(b) Unchilled potato salad in a 2-gal. crock in same refrigerator.

(c) Unchilled potato salad in a 2-gal. crock packed in 3 in. chipped ice, replenished hourly.

(d) Unchilled potato salad in a typical square, stainless steel insert (10 by 10 by 4 in.) used in counter service packed in 3 in. chipped ice, replenished hourly.

(e) Chilled potato salad in a stainless steel insert, handled the same as in (d) above.

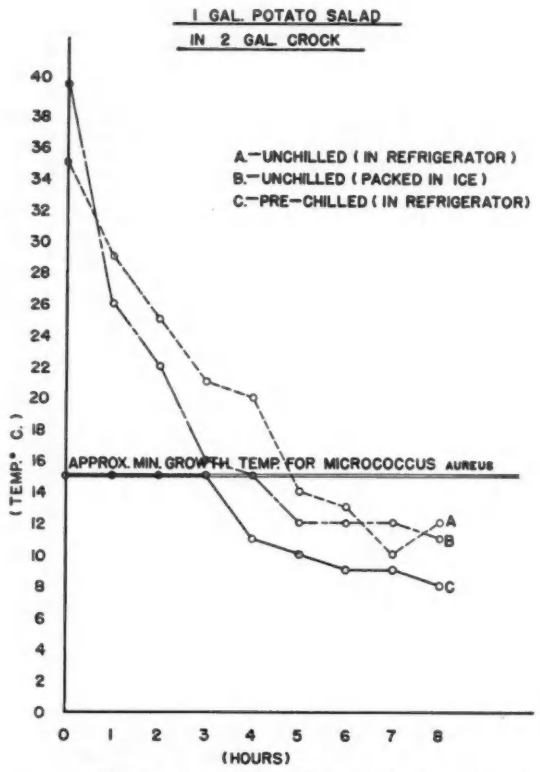

FIG. 3. *Cooling rates of 1-gal. lots of potato salad stored in home-style refrigerator and crock packed in ice. Center temperatures were recorded hourly for 8 hr.*

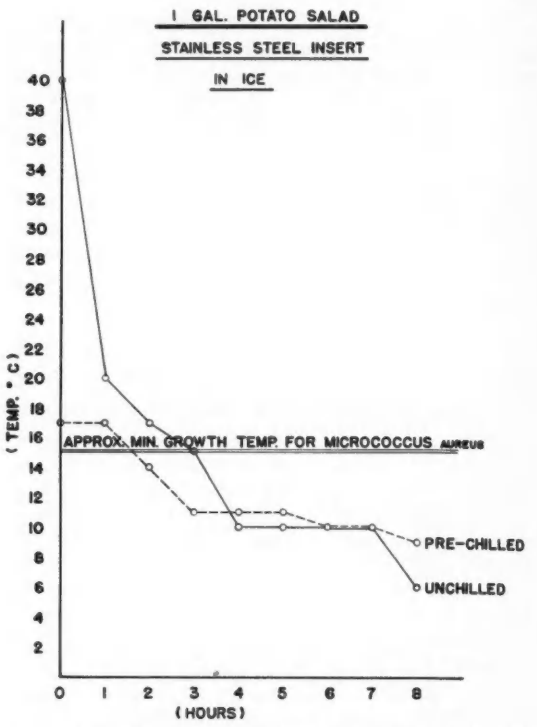

FIG. 4. *Cooling rate of 1-gal. batch of potato salad cooled in a stainless steel insert, packed in chipped ice replenished hourly.*

Center temperatures were recorded hourly for 8 hr. Bacteriologic studies were not made.

The initial temperature of the potato salad made from unchilled ingredients (approximately 1 gal. in a 2-gal. crock) was 35°C. (95°F.) when placed in a 4-cu.-ft. refrigerator. Five hr. elapsed before the center temperature dropped below 15°C. (59°F.). A similar crock containing 1 gal. potato salad prepared from chilled ingredients had a temperature of 15°C. (59°F.) when placed in the refrigerator. The initial center temperature in 1 gal. unchilled salad held in a 2-gal. crock was 40°C. (104°F.). When packed in chipped ice, the temperature decreased to 15°C. (59°F.) in 4 hr. (*Fig.* 3).

One gal. unchilled potato salad with an initial temperature of 40°C. (104°F.) in a stainless steel insert was packed in chipped ice. Cooling was rapid, and within 3 hr., the center temperature dropped to 15°C. (59°F.). A similar lot of salad prepared from chilled ingredients had an initial temperature of 17°C. (52.6°F.). When the container was packed in ice, the center temperature fell below 15°C. (59°F.) within 2 hr. (*Fig.* 4).

DISCUSSION

Quantitative accumulation of enterotoxin-forming micrococci, and hence of enterotoxin *per se*, will depend on the initial contamination, the suitability of the food as a bacterial growth medium, and the length of time during which growth is possible. It is evidenced from the data compiled in this study that foods, such as pie filling and potato salad, cool slowly, even under apparently ideal conditions and the microbic growth during the cooling process may be extremely rapid.

The findings in Experiment A, in which 2.6 million micrococci per gram of filling were found in the sample stored 24 hr. in a home style refrigerator should serve as a warning signal, even when good food handling techniques are used. Such a sample should be considered potentially dangerous, since, if removed from the refrigerator and allowed to remain at room temperature, the micrococci would reach enormous numbers within a short time.

Such foods as pie filling and potato salad should be cooled as quickly as possible and stored in small volumes or thin layers under refrigeration to avoid holding the food in the incubation danger zone, i.e., 50° to 120°F., any longer than necessary.

SUMMARY

Cream pie filling at 50°C. (122°F.) in deep containers (an approximate 4½-in.-thick layer of filling

or 1 gal. in a 2-gal. crock, and 3 gal. filling 10 in. deep in a 4-gal. crock) did not cool below 15°C. (59°F.) in 6 hr. and 15 hr., respectively, when stored in a 4-cu.-ft., home-type refrigerator, the initial temperature of which was 5°C. (41°F.). The approximate minimum growth temperature for *Micrococcus pyogenes* var. *aureus* is 15°C. Plate counts of the test organism at 9 hr. on the gallon lot of filling and at 15 hr. on the 3-gal. quantity were 2.5 million and 77 million per gram, respectively. No abnormal odors were detected.

The most rapid temperature decreases in unchilled potato salad 35°C. (95°F.) were obtained when 1-gal. quantities in 2-gal. crocks or similar amounts in 10 by 10 by 4 in. stainless steel inserts were packed in chipped ice replenished hourly. However, even in chipped ice, 4 hr. and 3 hr., respectively were required to cool the salad in the crock and stainless steel insert from a 35°-to-40°C. range (95°-to-104°F.) to 15°C. (59°F.).

Running water was an efficient cooling medium but is seldom cold enough to reduce the temperature of food sufficiently to inhibit the growth of enterotoxin-producing micrococci.

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BIOGRAPHICAL NOTES FROM THE HISTORY OF NUTRITION

Frederick William Pavy—May 29, 1829—September 2, 1911

The leading authority in London on diabetes in the latter half of the last century was Frederick William Pavy. In 1862, he published *Researches on the Nature and Treatment of Diabetes*; in 1892, *The Physiology of the Carbohydrates, Their Application as Food and Relation to Diabetes*; and in 1906, just five years before his death at the age of eighty-two, *On Carbohydrate Metabolism*. A busy practicing physician, he devoted much time to research and study of carbohydrate metabolism and was keenly interested in dietetics. His *A Treatise on Food and Dietetics* (1874, second edition in 1875) was a standard work. The state of nutritional knowledge of that period is well illustrated by his classification of the known alimentary principles; he described them as nitrogenous principles, hydro-carbons or fats, carbo-hydrates, and inorganic materials.

One other book by Pavy should be mentioned: *A Treatise on the Function of Digestion; Its Disorders and Their Treatment*, which appeared in 1867, with a second edition two years later.

Frederick William Pavy was born in Wroughton, Wiltshire, England on May 29, 1829, son of William Pavy, a maltster. His early education was at Merchant Taylor's School in London where Spartan discipline was maintained. He started the study of medicine at Guy's Hospital in 1848 and received his degree from the University of London in 1852, having won honors in four subjects and a medal in medicine. After serving as House Physician and Surgeon at Guy's Hospital, he went to Paris (1853) and came under the influence of Claude Bernard, the great physiologist and research worker. From that time on, Pavy made blood and urinary analyses; he substituted ammonia for potassium hydroxide in Fehlings solution and prepared the reagent in pellet form; he also showed that there was a definite relationship between hyperglycemia and glycosuria. Through his studies in chemistry and pathology, he helped to lay the foundation for present-day studies of metabolic disorders.

On his return from Paris (1854), he was appointed Assistant Physician and Lecturer in Physiology at Guy's Hospital and later (1861) became full Physician. Through the years many honors came to him. He was elected to the Royal Society (1863); was President of the Royal Medical and Chirurgical Society, the Pathological Society, and the Association for the Advancement of Medicine; he received honorary degrees and was chosen as honor lecturer on many occasions. On his eightieth birthday, he was presented with a silver bowl in token of affection and admiration by his colleagues.

Pavy was married in 1855 to Julia Oliver. They had one daughter. He was quiet, gentle, courteous, and reserved, though his face lit up when he talked of his researches. He was always punctual at the hospital, and precision, love of order, skill, and self-reliance characterized his work. When he had time to gather the facts and form an opinion, he held strongly to it. He was also an excellent host, known for his fine dinners. His mind was alert right up until his death which followed a short illness.

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The History of Artificial Feeding of Infants[1]

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ARTIFICIAL feeding has been defined as "feeding an infant with other than breast-milk" (1). Artificial feeding has perplexed every human society, and different cultures have tried to solve the problem of deficient maternal milk by a variety of measures. Some tribes of Eskimos throw the baby into the sea if the mother is unable to nurse him; in certain Arab tribes, the women pass the babies about to all of the lactating women in the tribe (2). Man persevered for centuries in the face of almost inevitable failure, before he finally attained success in artificial feeding. As recently as 1920, a University of Iowa Extension Bulletin warned: "Very occasionally it may be necessary to feed a baby artificially. The most may die or be too ill to nurse . . . Bottle feeding is a difficult matter and not without risks" (3).

Murals, frescoes, legends, and myths indicate that one of the earliest substitutes for breast feeding was to nourish the baby at the udder of some animal. The legends which tell of Romulus and Remus suckled by a she-wolf and Jupiter by a goat could not have been as far-fetched as it would seem. Even within the last century in Europe, there were well organized movements to feed the infants at the udders of domestic animals (4, 5).

The birth ritual of many societies places great stress on the baby's first food. Primitive man must have been much puzzled by the fact that milk secretion did not begin concurrently with the infant's birth. Then, too, many cultures, including most of those of Europe during the Middle Ages, considered the mother unclean at parturition (5). Small wonder, then, that they turned to other foods for the baby's first nourishment. In the Book of Isaiah, the infant Immanuel was to receive butter and honey. Hindu doctors of India's Golden Age allowed the newborn infant to lick an electuary of honey, clarified butter, gold dust, and the juice of Bráhmi leaves and Amanthā from the ring finger of his attendant (6). Soranus of Ephesus, the great Alexandrian physician of the second century B. C., suggested boiled honey for the first two days, then twenty days of wet nursing before the mother be allowed to nurse her child (7).

Deruisseau tells us that the ancients considered colostrum too caseous for the newborn infant (5). Perhaps the most extreme view was taken by Bartholomaeus Metlinger, who suggested in his fifteenth century tract that the new mother be given a young she-wolf to nurse (5). In medieval times, it was thought better for the early milk to be removed manually from the mother's breast, or for her to nurse an older baby who would be less likely to be damaged by her early milk (5).

EARLY RECORDS OF WET NURSING AND ARTIFICIAL FEEDING

Wet-nursing has been called one of the oldest professions, and it has been closely associated with artificial feeding. Hammurabi's code of 2250 B. C. penalized the nurse who substituted another baby for one who died at her breast. Her breast was to be amputated (6). One wonders whether the law makers may not have been suspicious that she might substitute her own child! Sudhoff found that in the age of Ptolemy, the Hellenized women had contracts with their slave women, who were to nurse the babies at their own breasts for the first six months, then to feed them "the best cow's milk," which must be delivered daily. Unpunctuality was fined (6).

Artificial feeding was rather widely practiced in ancient Rome, but the ages of the babies and what they were fed is not known. At any rate, the Romans had not only wet nurses, but dry nurses, too, who

[1] Third Lydia J. Roberts Award Essay, read at the 37th Annual Meeting of The American Dietetic Association in Philadelphia on October 28, 1954. This Award is made possible by a grant from Gerber Products Company, Fremont, Michigan, for the purpose of encouraging historical study of nutrition. Presentation of the Award was made at the Annual Banquet of the Association on October 29, 1954, by Mary P. Huddleson, former Editor of this JOURNAL (see JOURNAL, page 1254, December 1954).

Village nurse returning to the country

Wet nurses' wagon

Lenoir, the Lieutenant-General of Police in Paris, in 1870 estimated that not more than one-thirtieth of the babies born were nursed by their own mothers. The babies of poor and destitute mothers (about 80 per cent of those born in Paris) were nursed in the country. Most of the contacts and business transactions between parents and wet nurses were made by agents, meneurs or meneuses, operating from wet nursing bureaus. These were regulated by law and closely supervised by the police. The nurse's fee was 5 to 15 livres ($1 to $3 a month).—Based on Drake, T.G.H.: The wet nurse in France in the eighteenth century. Bull. Hist. M. 8: 934, 1940.

specialized in artificial feeding (7). What happened to the wet nurses' children and how they were fed were seemingly of no concern to society at that time.

Soranus wrote the first detailed instructions for feeding and care of infants and therapy of their diseases. He advised that the child should not be weaned for any reason until it was strong enough to take solid food (about six months after birth). Then, he might be given bread crumbs softened in honey-water, milk, sweet wine, or honey-wine; later, soup of coarsely-ground husked wheat and eggs could be given, but this should not be fed along with milk because it was undigestible. He suggested that water or dilute wine be fed from an artificial nipple if the baby was thirsty (6–8).

Galen's heritage to later ages seems to have been twofold, when it came to infant feeding. In accordance with his theory about the humors, children were believed to be warm and moist, and they were supposed to eat food of the same nature (9, 10). Drummond also thinks that Galen probably had ulcers, which was responsible for some of his ideas about diet, and particularly his prejudice against fruit, which did much, Drummond thinks, to contribute to the high incidence of scurvy among young children in European history (10).

Avicenna's *Canon of Medicine* preserved much classical medicine throughout the Middle Ages. Avicenna advised prechewing the infant's food, and most medieval writers copied this advice. In fact, prechewing seems to have been common practice, which was followed even within the last century. But perhaps Avicenna does not deserve as much censure for this as he has received in recent years. Prechewing has also been observed in such widely separated cultures as those of the Eskimos and the Chinese (11, 12).

EUROPE: MIDDLE AGES TO 1800

Little was written about the infant and his food during the Middle Ages, and much of what was written was copied, without due credit, from classical writings. However, artificial feeding could not have been uncommon. Hans Sachs, the Nuremburg poet, wrote in 1544 that when a woman has a baby she must have "milk, flour, and pans for the baby, a nurse maid and a little bottle." One of the cries of the Paris street-criers of the sixteenth century was "Milk for babes!" Henri IV of France was brought up on asses' milk. Pap and panada ranked high in favor as baby foods. Their origin seems to have been lost, but has been attributed to the Arabians (7,13,14).

One of the most interesting and remarkable books in the history of artificial feeding is Simon de Vallembert's *Cinq Livres de la Maniere de Nourir et Gouverner les Enfans de Leur Naissance*, published in 1565. It is the first book on pediatrics in the French vernacular. He condemned prechewing, which he said was likely to cause worms, and recommended that fruits and vegetables be given early. He thought that the spine might be injured by faulty feeding, though at that time the etiology of rickets was not understood. For feeding difficulties, he suggested goat's milk, almond milk, blanc mange, sweetened broth, and nutrient enemata, and recommended a panada made of bread crumbs, bouillon, milk, and vegetables for the young infant. Lyon considered this diet better than any previous and many thereafter (9, 13, 14).

With the Industrial Revolution, wet nursing and artificial feeding became extremely common. On one hand, the poor women who worked for long hours in the factory had to find something to do with their babies. Moral codes were lax, and often their babies were abandoned. A few were left on the doorsteps of the rich, but too often they were abandoned on the

streets or were dropped on city dumps. Foundling hospitals were established to care for such babies. On the other hand, the growth of a leisure class encouraged women who did not want to nurse their babies to turn them over to a wet nurse. Baby farms had grown up during the Middle Ages, since many of the wet nurses and dry nurses took the babies home with them to the suburbs or villages to nurse them (10).

The wet-nursed baby could have been only slightly better off than the artificially fed baby. William Cadogan, one of the most influential men in his century in the field of pediatrics, said of both wet nursing and dry nursing (9):

> The ancient Custom of exposing them [the babies] to wild Beasts or drowning them would certainly be a much quicker and more humane way of despatching them.

Infant death rates were appalling at best. About one baby out of three survived its first five years of life, but for those who were artificially fed, Sir Hans Sloane estimated at least three times as high a death rate (6), and in the artificially fed infants in foundling hospitals, the death rate sometimes rose as high as 99.6 per cent or even higher (13, 15). The problem was almost as serious among the rich as among the poor. Queen Anne of England lost all eighteen of her children in infancy, from "spoon-feeding and wet-nursing".[2]

Infant feeding was supervised by women who doubtless depended primarily on experience and the opinion of other women. Meat played a prominent role in the diet, but it was unsuitably prepared and used. The newborn infant was stuffed, as described by William Cadogan (9):

> The constant Practice is as soon as a Child is born to cram a Dab of Butter and Sugar down its throat, a little Oil, Panada, Caudle or some such unwholesome Mess. So they set out wrong and the Child stands a fair Chance of being made sick from the first Hour. It is the Custom of some to give a little roast Pig to an Infant which it seems is to cure it of all the Mother's longings.

He advised breast-feeding, with solid food (bread) added at three months. Sir William Fordyce wrote in 1773 (10):

> . . . they are fed on meat before they have got their teeth, and what is, if possible, still worse, on biscuits not fermented, or buttered rolls, or tough muffins floated in oiled butter, or calves-feet jellies, or strong broths, yet more calculated to load all their powers of digestion.

One impetus to artificial feeding may well have been the belief that the wet nurse's milk conveyed the character of the woman. This idea was debated with feeling by some of the most learned men of the Renaissance, and even in the late eighteenth century, it had influential adherents within the medical profession. Hanyard, the British reformer, advocated artificial feeding to raise the level of morality (10).

Use of milk in artificial feeding was not at all a universal practice. M. Brouzet, physician to the King of France, wrote in 1754 that milk "produces strange maladies when it coagulates in the stomach" (16). In 1760, the French physician, J. C. Desessartz, published a table of comparative chemical characteristics of various milks. He said that human milk was preferable for the young infant because of its low casein content and soft curd, and he rated below it the milk of the ass, mare, goat, cow, and ewe in that order (14). Asses' milk seems to have been generally considered more easily digested than cow's milk (17). In 1761, Thomas Young's graduate thesis at Edinburg reported pioneer work on experiments in the chemistry of milk.

By the middle of the eighteenth century, cow's milk was frequently boiled or diluted for infants. Nicholas Rosen von Rosenstein was credited by Levinson (18) as being the first to use diluted milk; and William Cadogan has been said to be the first to have advised boiling it. Hugh Smith's *Letters to Married Women on Nursing and Management of Children* first taught, in 1772, the sufficiency of breast milk (18–20). This was rather a revolutionary idea, in contrast with previous practices.

It is necessary to understand the status of science, and of medicine, to appreciate why progress in infant feeding was so slow. For many centuries, disease was attributed to demons and evil influences. The sixteenth and seventeenth centuries marked the beginning of independent thought about problems such as disease. Walter Harris, a contemporary of Harvey, thought that infant diseases were due to the baby's moist nature. Hermann Boerhaave, who lived from 1668 to 1738, attributed them to viscid substances in the infant's esophagus, stomach, and viscera, while Laurent Joubert thought they were due to some underlying nutritive or hygienic error (21). By the end of the eighteenth century, a number of books about pediatrics were published, among them Michael Underwood's *A Treatise on the Diseases of Children*. The first edition was dated 1784, but it was so widely used that it went through ten or more editions in English and French and was the standard text on pediatrics for over fifty years (16).

But progress was slow. The medical practitioner of that day had to overcome the evil reputation of the medieval doctor, who had been closely associated with witchcraft. In addition, many doctors did not wish to risk their reputations on unpredictable pediatric cases, while many mothers held the opinions of older women in higher respect, when it came to infant feeding. Even until well along in the twentieth century, doctors rarely saw babies until they were seriously and even critically ill (9, 22, 23).

[2] Caulfield, E.: The Infant Welfare Movement in the Eighteenth Century. N. Y.: Paul B. Hoeber, Inc., 1931.

THE EARLY NINETEENTH CENTURY

From the viewpoint of infant mortality statistics, the nineteenth century was one of the worst. This is not surprising, considering its heritage of ignorance, misinformation, and poor sanitary practices. Chown described (20) the "variety of messes" used in feeding the infant in America in 1800: water pap, cereals cooked in cow's milk (given at one month), herb tea of cowslips and star anise to replace the pap. In America, as in England, at that time, milk played a subordinate role in the infant's diet. But this changed shortly.

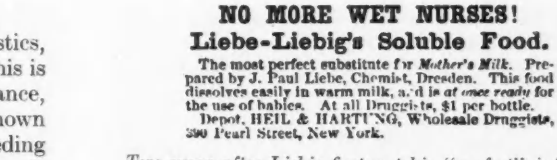
Rousseau, with his advocacy of the natural life and maternal nursing, had world-wide influence during the late eighteenth century (5, 8). Perhaps it is not solely coincidence that from that time forward, milk was looked on as "nature's food" for the baby. The line of reasoning was that man is a mammal, and the mammal prepares milk for its young, which, therefore, should best be used in as natural a form as possible. Cow's milk was modified to make it more nearly like human milk. The continental practice of boiling milk for the infant was almost universally opposed by American pediatricians on the grounds that this would alter its natural form. Likewise, both here and in Europe, it was believed that nature did not intend for fruits and vegetables, meat, and other foods to be included in the infant's diet until he had teeth. This concept of emulating nature was to enslave the minds of many of the best pediatricians until well into the twentieth century (24–28).

During the nineteenth century, then, milk became firmly entrenched as the basis of artificial feeding for infants. Milk alone was believed sufficient until the baby showed signs of failure, and often the young child's diet was confined to little more than milk until he was two years of age or older. Meat was considered damaging for him. The first supplementary food was "farinaceous" food, which was generally referred to as "light and unirritating" (24).

THE FIRST PROPRIETARY FOODS

The beginning of milk modification, and of the proprietary food industry as well, might be said to date from 1867, when Liebig marketed his "perfect" infant food (10). Previous infants' foods had been largely carbohydrate. Liebig's Food was the first to take into account the baby's supposed physiologic needs. It was a mixture of wheat flour, cow's milk, and malt flour, cooked with potassium bicarbonate. The product was a liquid which did not keep well. When contemporary physicians criticized it as to its digestibility and similarity to breast milk, Liebig took issue with them (7, 10, 14, 28).

From this time forward, the variety of proprietary foods on the market constantly increased. Often fantastic claims were made for them. Familiar names in the United States were "Chapman's Entire Wheat Flour." "Allen and Hanbury's Infant's Food,"


NO MORE WET NURSES!
Liebe-Liebig's Soluble Food.
The most perfect substitute for Mother's Milk. Prepared by J. Paul Liebe, Chemist, Dresden. This food dissolves easily in warm milk, and is at once ready for the use of babies. At all Druggists, $1 per bottle.
Depot, HEIL & HARTUNG, Wholesale Druggists, 390 Pearl Street, New York.

Two years after Liebig first put his "perfect" infant food on the market, this advertisement appeared in the July 31, 1869 issue of Harpers' Bazaar. *It was the forerunner of countless advertisements, often making fabulous and unfounded claims of merit. Too often, the early proprietary foods were actually a catch-all for low-grade ingredients.*

"Mellin's Food," "Horlick's Food," "Hill's Nursery Biscuit Powder and Biscuit," and a variety of others. At best, they were not very satisfactory. Sadler criticized "Robb's Biscuits" because they turned sour on storage. She also had a low opinion of the lentil powders that were sold under "fanciful names" and advised using arrowroot with milk, not with water alone. Often these foods were used as the sole article of diet for babies. Since most of them contained little more than concentrated carbohydrate, the results were usually disastrous (4, 23).

The early food manufacturers had much to learn about how to preserve foods. Marian Harland, a writer for *Babyhood* magazine, described one of the unpalatable concoctions in her book published in 1885 (26):

> A friend whose six-months-old child stood in need of hand-feeding once brought me what she denominated in her maternal indignation "a murderous mess" . . . It looked like biscuit-paste, was gray, streaked with yellow, and smelled like rancid butter, or, to speak more plainly soap-grease. . . A neighbor had reared three babies upon this preparation and recommended it highly.

Abt has recounted (23) how infant feeding was the greatest problem of the pediatrician at the turn of the century because so many mothers were feeding artificially. He saw many babies bordering on starvation, with rickets, scurvy, and ulcers of the cornea. Often when he asked what the mother was feeding her baby, she would show him a can of widely advertised proprietary food. Sick infants were usually fed preparations like rice water, broth, beef or herb teas, and albuminous beverages (4, 29). Raw meats were used by some for children who didn't grow.

PRESERVATION AND MODIFICATION OF MILK

Preserved milk is by no means a modern commodity, for Marco Polo described seeing powdered milk in the thirteenth century court of Kublai Khan. A powdered milk was made in both England and France in the early nineteenth century, but this seems to have been little used. Gail Borden received a United States patent for condensing milk with heat but without any additions in 1856. This product was quickly investigated and favorably reported on by the New York Academy of Medicine as being

suitable for infant feeding. Soon thereafter, Jeremiah Milbank advanced funds to manufacture the milk. This early product needed sweetening in order to preserve it. This sweetened product was soon given to artificially fed infants in a haphazard fashion, sometimes greatly diluted, and with no awareness of their bodies' needs (19, 23). Not surprisingly, it fell into disrepute as an infant food. Evaporated milk was condemned along with it, and the criticism was reinforced by publication of the American Pediatric Society's *Collective Investigation of Scurvy* (30), which showed the great majority of the 379 cases studied were associated with proprietary foods and sterilized, condensed, and pasteurized milk.

Malted milk was viewed more favorably at this time. William Horlick, a successful food manufacturer, had developed malted milk at the request of a group of doctors who wanted an infant food made of powdered milk and grains. His product was patented in 1883 (28).

SCIENCE REPLACES SUPERSTITION

During the last part of the nineteenth century, important ground-work was being laid for what Meyer has called the "chemical period" in infant feeding (31). Numerous books were written on the subject of the infant and his food. Studies of digestion, metabolism, and food composition had a profound influence on the contents of these books. Calories, ash, and nitrogenous foods were considered essential as a result of these studies and publications (15, 17, 25, 32, 33). The writers discussed the size of the infant's stomach in comparison with that of the adult and based their recommendations of the amount to feed per meal on these estimates. Of course, the studies made may well have been on stomachs of malnourished and starving infants, and this may account for the fact that recommendations of that time are not today considered adequate.

The modification of milk in a scientific manner is generally considered to date from 1869, when Philip Biedert, a German pediatrician, published his observations that the protein content of cow's milk was approximately twice as high as that of human milk. Biedert also studied the effect of acid on the consistency of the curd and suggested that casein curds were responsible for digestive difficulties. In his modifications, he added cream, whey, and sugar to make the cow's milk more nearly equivalent to human milk (17, 34).

In this country, John Forsythe Meigs enlarged on his ideas. "Meigs' Mixture" was the direct predecessor of all the "modified milks" in the United States. It consisted of milk, cream, sugar, and lime water, so mixed as to contain 3.5 per cent fat, 1.21 per cent protein, 6.66 per cent sugar, and 0.25 per cent ash. Rotch used it as the basis of his "percentage feeding method." (8).

Rotch's Walker-Gordon Laboratories were the forerunners of the modern hospital formula room. The one in Boston was established in 1891, and he later established others in a number of American cities, as well as one in London. Hess later credited him with being first to emphasize all food elements, as well as the first to consider the individual child. The idea generally accepted at this time was that nutritional disturbances were due to an excess of some damaging factors, and this was accepted by Rotch as well (8, 23, 32, 35, 36). Rotch's overelaborate formula calculations required the slide-rule, or pages of figures.

Abraham Jacobi, who is called the "father of American pediatrics," never was an adherent of what is known as the "percentage school" of milk modification, commenting that "you cannot feed babies with mathematics; you must feed them with brains." Jacobi started rather early to use heated or processed milks, diluted and sweetened with cane sugar. He thought that a monotonous diet would lead to scurvy, rickets, and other diseases, which was in contrast with the idea of most of his contemporaries that the baby's diet should be restricted to a very few foods (7, 37).

While the percentage feeding method was in vogue in America, the European pediatricians were busy developing the calorie method of feeding. Czerny was the leader of this movement, and he approached the problem from the standpoint of intermediary metabolism. He blamed excessive fat ingestion for the alimentary disturbances in infants and developed his *malz suppe*, made of milk, white flour, and malt sugar. This was used widely in the United States as recently as 1924 (38, 39). Finkelstein, as the result of painstaking studies of intestinal intoxication, developed *eiweiss* milk, the first of the protein milks, for he blamed excessive carbohydrate intake for feeding difficulties (7, 11, 31, 34, 39).

In this country, meanwhile, casein curds were for years the subject of controversy between Brennemann and Marriott. Brennemann began the study of size of curds of cow's milk and human milk and the effect of acid on their size and toughness. Starch, too, came in for its share of the blame for *mehlnahrschaden*, or "starch-injury," as it was called (11, 31).

Proprietary infants' foods multiplied, as they have continued to multiply up to the present day. Too often, before there was federal regulation, they were a catch-all for low-quality ingredients, and the manufacturer was little-concerned with truth in advertising (29, 31).

At this time, too, pediatric clinics were opened, and thus the way was paved for understanding babies' needs. Abraham Jacobi established the first pediatric clinic in America in 1860 (17, 32). Davidson credits Friedrich Ahlfeld of Leipzig with being the first to suggest weighing the infant in connection

with the scientific study of his growth and metabolism. This was in 1878 (15). The French pediatrician, Budin, at his clinic for infants, the "Consultations de Nourissons," which was started in 1892, also examined and weighed babies and had records kept of the time of birth and weight changes, and he issued bottles of sterilized milk to the mothers (8, 40).

EVOLUTION OF THE FEEDING BOTTLE

Meanwhile, although modern concepts of the importance of nutritional deficiency and a realization of the role of bacterial infections were to be delayed until well along in the twentieth century, a modern, sanitary feeding bottle had at last been perfected.

Feeding bottles for infants have been found in the excavations of the Nile basin; French ones date back 2000 years; and well made glass and porcelain bottles have been found in classical graves (2, 6, 7). In medieval Europe, wooden bottles with tubular spouts, or cows' horns with the end perforated and milk supply regulated by a sponge, rag, piece of parchment, or cork were common (2, 5, 13). Around 1770, Hugh Smith introduced his bubby-pot, which was considered a great improvement (5). Glass bottles were not used until the nineteenth century was well along.

Ivory, silver, chamois, leather, linen, and sponge nipples or teats were used. In the nineteenth century, the teat of a heifer was used, and this was preserved in spirit until putrefaction began (19). In 1845, Elijah Pratt of New York obtained a patent for a rubber nipple, but the early rubber nipples were unpopular because they were not pliable enough, and they had a "repulsive taste and smell" (20, 41). The *Godey's Lady's Book* of 1860 advocated the use of goose quills as an excellent sucking device (24). In 1864, the long sucking tube was introduced. This was very popular and continued in use on the French baby farms as late as 1894 (19).

Writers of the eighteenth and nineteenth centuries constantly urged cleaning the feeding utensil well. At least once a day, it was sometimes suggested, it should be scalded. Struve described the sanitary problem of his day, when he wrote (9):

> One of the most disgusting customs is the sucking bag which is given to a child for the double purpose of nourishing and composing it. Many a poor mother will tear a rag from an old shirt or a clout which she has found perhaps in the street, and which may contain the remains of a veneral contagion: of this she makes a small bag, which is filled with bread, milk, and sugar and then given to the child to suck. If the infant happens to drop this rag on the ground it is presented again though covered with dirt: a number of flies settle upon it when the child is alone which but the moment before may have quitted a saucer of poison.

Drake found that between 1841 and 1946, our United States Patent Office granted 232 patents for infant feeding devices. Special air inlets, covers for protection, ease of cleaning, and unbreakability were the main features they had to offer, as well as vacuum insulation. But Meyer thinks that satisfactory feeding utensils are still today our greatest need in artificial feeding (31, 41).

SANITARY MILK SUPPLY

Concurrently, an awareness of the importance of a hygienic milk supply developed. Until its milk supply was safe, the infant mortality rates in the city far exceeded those of the country. To explain this, Alphonse Le Roy suggested in *Medicine Maternelle* in 1830 (16):

> There is in milk, besides the different nutritious principles, an invisible element, the element of life itself, a fugitive gas which is so volatile that it escapes as soon as the milk is in contact with the air.

In New York City, Robert Hartley began an agitation for improving the milk supply in 1830. A pure milk campaign started soon thereafter as a by-product of the temperance movement, but it was not until the nineteenth century was nearly over that this culminated in success (42). LaFétra described New York City's milk supply of 1832 (13, 43):

> . . . more than half the milk used in the city came from cows fed on distillers' mash. At Ninth Avenue and Eighteenth Street, adjoining a distillery, were sheds containing 2,000 cows. The stables were rented at five dollars a year per cow, and mash supplied at nine cents a barrel. City tramps were the milkers, being paid for their labor by night shelter in the stables. The cows were diseased and the milk filthy.

Even in the early twentieth century, dirty milk was characteristically found in all large American cities. Abt, who practiced pediatrics in Chicago, described the odorous tin cans in which it was sold. Flies "festooning" the open containers and customers carrying their milk home in open pitchers or pails in the hottest months were a common sight. Then, once at home, Abt says, it was set out in a hot room on a table, because there were no ice boxes (23).

Gail Borden started the first sanitary inspection of milk in 1857, and Jacobi was probably the first American pediatrician to suggest heating whole milk (28). In 1889, he recommended that New York City adopt the device that Soxhlet had improvised in 1886 to sterilize milk. Nathan Straus financed Henry Koplik in the establishment of a system of depots for distributing heated milk to New York's babies, but this practice of heating milk was violently opposed at first by the medical profession on the grounds that it rendered it less like breast milk. When safe milk was available, diarrhea, which had been the first cause of infant death, was quickly

controlled, so that today it ranks only in sixth place among causes of death (11, 23, 28, 44).

DEFICIENCY DISEASES

Rickets and scurvy have been two of the outstanding hazards in the life of the young child throughout history, but Hume has remarked that vitamin deficiency problems were recognized only when milk was so diluted or otherwise treated as to decrease the vitamin intake. Pap and panada, and later proprietary foods, undoubtedly precipitated the diseases of scurvy and rickets (19, 45, 46).

The word "rickets" comes from the Old English "wrickken," meaning to twist (47). Cod-liver oil was an old Dutch folk remedy, according to Abt, introduced into modern medicine by an English doctor about 1785 (23). But rickets was so commonplace in England and America a half century ago as to have been evidenced in the city of Leeds in 50 per cent of the children. In World War I and thereafter, the prevalence of rickets prompted widespread investigation, but even after Mellanby produced a dietary rickets in dogs in 1918, it was some time before the etiology was understood as being due to a vitamin lack. Steenbock and Daniels introduced irradiated milk in 1925, but it was not too popular, until, during the course of the next fifteen years or so, repeated studies convinced medical workers of its value (19, 48).

Scurvy was even more baffling. Cheadle studied infantile scurvy as early as 1878 and said that the diets of these children were "scurvy diets" (40), but as so often happened in the history of artificial feeding, theories as to the cause of scurvy often merely confused the picture (25, 35, 37, 40, 49). The vitamin theory of etiology of disease was revolutionary, and even when the vitamins were recognized as being of value in disease, few observers realized that they were also needed by the normal infant. In 1917, Abt included no anti-scorbutic in his recipe for artificial milk (29), and Mary Swartz Rose's 1916 edition of *Feeding the Family* recommended starting to feed strained orange juice at seven months of age (50). Grulee did not advise anti-scorbutics routinely in 1922 (51). Hess, at about the same time, found evidence that milk itself was anti-scorbutic, although later it was shown that milk is extremely variable in ascorbic acid content. Hess first showed the role of infection in precipitating scurvy, and this helped to clarify the picture (17, 40, 52). It was finally the intensive investigation of Macy and her co-workers, together with Park's study of the prevalence of scurvy stigmata in autopsied children, that led to universal inclusion of ascorbic acid in the diet in early infancy (46, 53).

Daniels showed the role of many factors in the growth of infants, among them thiamine and riboflavin (54). Spies later showed the importance of niacin in preventing pellagra. Now, pyridoxine has been demonstrated to be needed by the human infant (55, 56).

RECENT TRENDS

The modern era of artificial feeding might be said to date from 1930. At the White House Conference of that year, ideas were exchanged and data compiled about the child's nutritional needs, and the composition of milk (28, 57).

Meanwhile, pediatricians had begun feeding a more liberal diet. The banana had been frowned on severely for years. Then Pease and Rose reported good results when they fed bananas to a group of sick children and one idiot boy (58). Haas suggested its use in celiac disease in 1924 (59). The baby food industry, which started about 1929, first advertised five cans of strained baby foods for a dollar, including mailing costs, in *Good Housekeeping*. Today, this is a multimillion dollar industry (60). Meats are now added to the baby's diet earlier than ever before, and some pediatricians use them for premature infants (61–64).

But there are still apparently unidentified vitamin factors in milk and also unrecognized factors that make human milk superior to cow's milk formulas for the human infant (65–67). These are some of the reasons why the final and most fascinating chapter in the history of artificial feeding cannot yet be written. Today, we must assess the efficacy of infant feeding on the basis of other criteria than just the ability to survive and gain weight (68–74). Almost all mothers can breast feed their infants, but the effort to do so varies with social and economic conditions which are not fully understood (75, 76). Celiac disease, glycogen storage disease, tetany and other feeding problems of the premature, vitamin-resistant rickets, and pyloric stenosis are beginning to yield their secrets as we gain increased understanding of biochemical and psychologic aspects of infant nutrition. Allergy, too, can be dealt with more effectively (77–93). The indirect benefits of successful artificial feeding are beyond our ability to assess. One goal for tomorrow is to extend present advances to include all of the world's infants (94–96).

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DDT in Foods

Restaurant meals and institutional meals have been analyzed for DDT by the Communicable Disease Center of the Public Health Service. Dr. Wayland J. Hayes, Jr., reported that no meal was found which contained no DDT, although some foods were regularly free of it. Fatty foods, or foods cooked in fat, tended to contain more than other foods.

Experiments have shown that human beings can tolerate dosages of DDT as high as 0.5 mg. per kilogram body weight for several months without suffering adverse effects, either subjectively appraised or discoverable by laboratory analysis or physical examination. This is about two hundred times the average total amount the average-sized man would get from breakfast plus lunch plus supper in the meals analyzed.—*From Science Digest, February, 1955.*

Vitamin D and Calcium Requirements[1]

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DIETARY requirements of vitamin D and calcium are properly considered together since vitamin D increases the efficiency of absorption of dietary calcium and makes possible its utilization for bone formation. The need for vitamin D may, therefore, be greater or more critical if the calcium intake is low, particularly if there is a marked imbalance between calcium and phosphorus intake. A high intake of calcium does not, however, make vitamin D unnecessary, for rickets due to lack of vitamin D was formerly quite commonly seen in infants fed cow's milk which provides a high-calcium diet.

VITAMIN D NEEDS

Vitamin D is probably needed throughout the entire life span, but the younger and more rapidly growing the child, the more rapidly will the evidences of vitamin D deficiency appear. The vitamin D requirement of the infant can be more readily determined, therefore, than that of the older child and adult. The small, premature infant weighing 3½ lb. or less at birth may show evidences of rickets as early as six weeks to two months of age if not given vitamin D supplements (1). The diagnosis is made on the basis of changes in the serum calcium and phosphorus and alkaline phosphatase levels. There is frequently no evidence of rickets in the bone X-ray at this early stage, even though the biochemical changes of vitamin D deficiency are marked. As little as 250 I.U. vitamin D per day—approximately the requirement of the full-term infant—will prevent these biochemical signs. The rapidity with which vitamin D deficiency appears in the premature infant does not, therefore, indicate an increased daily need of this vitamin for maintenance. On the basis of a variety of studies, it has been estimated that the vitamin D requirements of the vast majority of infants are satisfied by a daily intake of 400 I.U. vitamin D (2).

It has been much more difficult to arrive at the vitamin D needs of the older child and adult, although there is evidence that vitamin D *is* required. During the period of rapid growth, vitamin D deficiency results in a disturbance of bone formation which we know as rickets. After growth has ceased, lack of vitamin D and a low-calcium intake with an unfavorable calcium-to-phosphorus ratio may result in a failure of proper calcification, termed "osteomalacia." This is particularly apt to occur in women who have gone through pregnancy and lactation, because of the extra calcium requirements at these times. In addition, osteomalacia may occur in individuals with disturbances of fat absorption and increased losses of fat in the stools, since under these conditions dietary vitamin D is not absorbed and, in addition, calcium is unavailable because it is bound to fatty acids as insoluble soaps. In some of these patients, doses of vitamin D of the same order of magnitude as used in treating infantile rickets have been successful in improving calcium absorption.

The actual vitamin D available to the normal child and adult is hard to measure, since the endogenous vitamin D produced in the skin by exposure to the ultraviolet rays of the sun cannot be accurately estimated. This can be an important source of vitamin D, particularly in climates where exposure of the body to sunshine is feasible for most of the year. But, in the climate of Philadelphia or Baltimore, for instance, the intensity of ultraviolet radiation reaching the earth is inadequate to induce vitamin D formation except for the few summer months. The best assumption which can be made is that vitamin D is required throughout life and that the requirements of the older child and adult are no greater than those of young infants. Maximum retentions of calcium are found in children receiving these levels of vitamin D (3).

SOURCES OF VITAMIN D

In infancy, the widespread use of vitamin-D-enriched milk, either evaporated or homogenized,

[1] Presented at the 37th Annual Meeting of The American Dietetic Association in Philadelphia, on October 29, 1954.

has been an important factor in the elimination of rickets. A can of enriched evaporated milk or a quart of enriched homogenized milk supplies 400 I.U. vitamin D, which is sufficient for the vitamin D needs of most infants. The very young infant and particularly the premature infant must, however, receive supplemental vitamin D since their daily milk intake is much less than a quart. The breast-fed baby must also receive vitamin D supplements, since human milk is not rich in vitamin D and will not supply the normal requirements. If vitamin D concentrates are given, the daily administration of 800 I.U. is sufficient, which allows for the possibility that vitamin D in this form is not as efficient as that incorporated in the milk.

The older child and adult may also receive their vitamin D needs from a quart of homogenized vitamin-D-enriched milk a day. However, only a portion of the fresh milk sold is vitamin-D enriched, and the use of this type of milk varies from community to community. Foods such as egg yolk, tuna fish, salmon, and herring also provide small amounts of vitamin D, and with the addition of ordinary exposure to sunshine, the vitamin D needs of the normal child and adult are apparently met. Vitamin D supplements may, however, be indicated for women during pregnancy and lactation. Although enrichment of other foods, such as bread, with vitamin D has been suggested, there seems little reason to take such a step since there is no evidence that deficiency of vitamin D is common in older children and adults in this country.

CALCIUM REQUIREMENTS

It should be easy to determine the calcium requirement of the young infant since human milk is the natural food at this age. Analysis of human milk for calcium and estimation of the volume of milk taken by the infant should permit calculation of the actual calcium intake of the breast-fed infant; this presumably should be the calcium required. A four-month-old nursing infant, for example, might receive a quart of human milk a day. This would supply 300 mg. calcium, and certainly such a breast-fed baby, all other things being equal, would grow satisfactorily and if given vitamin D, would show no evidence of rickets. The calcium retention of this infant would, however, not be as great as that of an infant of the same age receiving cow's milk, for the calcium content of cow's milk is about four times greater than that of human milk. Babies given these higher calcium feedings retain more calcium than do breast-fed infants (3). Practically all of the retained calcium is deposited in the bone, since less than 1 per cent of the body calcium is found outside of the bones and teeth.

Is the increased retention of calcium in cow's-milk-fed infants as compared with breast-fed infants evidence that the bones of the former grow more rapidly or are stronger? It is more likely that the bones can vary within fairly wide limits with respect to density of calcium salts and still be normal in structure and growth. This does introduce a problem, however.

The standards for calcium need in children are based on the calcium intake needed for maximum retention. In the case of the young infant, such standards would indicate that breast-fed babies receive insufficient calcium. Would not such standards also exaggerate the calcium requirement of the older child? This is perhaps not of too great importance in this country since calcium-rich foods are readily available, and the increasing use of milk and milk products has brought the calcium content of the average diet well up to recommended levels. A pint of milk, one egg, 1 oz. enriched cereal, four slices enriched bread, and ½ oz. American cheese or 2 oz. cottage cheese together supply almost 1 gm. calcium. In addition, other sources of calcium, such as the calcium-containing vegetables (kale, broccoli, collards, turnip greens, navy beans, and so on) plus foods to which milk or milk solids are added in their preparation, may increase the calcium intake by about 500 mg. a day. Calcium intakes of 1500 mg. or more are, therefore, not rare in the diets of American children. Such relatively high calcium diets are in sharp contrast to the low-calcium dietaries of many other peoples living in parts of South America, Asia, and Africa (4).

The growth rate of American children during the last few decades has been greater than in previous generations, and the possibility that the high calcium intakes from infancy on may play a role in this acceleration of growth has, of course, been considered. It is impossible to separate the role of calcium from the effects of other improvements in diets of the infant and child, such as in protein content, B-complex, and ascorbic acid. It has been suggested, however, that calcium does play an important role in the increased growth rate of well nourished children.

In tropical and sub-tropical countries, the calcium intakes are usually low, 200 to 500 mg. per day, and the availability of the calcium may be diminished by the very high phosphorus content of the diet. The calcium-to-phosphorus ratio may be as low as 1:10. In addition, cereal foods which contain phytic acid form a large proportion of these low-calcium diets. Phytic acid forms insoluble calcium phytate, thus reducing the availability of dietary calcium.

The relatively small stature and diminished growth rate of children eating such diets has been ascribed in part to the calcium deficiency (4). Supplementation of diets of children in India with calcium lactate has been reported, for example, to result in an increased rate of weight gain and increase in height in comparison with children not receiving the supplement (4). However, the low-calcium diets are,

in addition, usually low in protein and calories, and it is also impossible to compare the growth rates of children of different genetic backgrounds living under different environmental conditions. For this reason, the actual role of high-calcium diets in stimulating growth remains uncertain.

It is known that children may adapt to low-calcium intake if vitamin D is adequate and can maintain normal bone structure despite calcium intakes below recommended levels. Regardless of whether high calcium intakes increase growth, rapid growth certainly does increase calcium needs if the bones are to contain sufficient calcium salts for proper rigidity and strength. The relatively high calcium intake of the well nourished American child is, therefore, of importance in view of the rapid skeletal growth of the child and the large skeletal size of the tall American adult.

IS EXCESSIVE CALCIUM INTAKE HARMFUL?

Encouragement of the use of milk and milk products and the availability of fresh pure milk and of evaporated milk in this country have been important factors in the improved nutrition of American children with respect to other factors as well as calcium. We might ask whether there is any reason to consider the possibility that excessive calcium intake could be harmful. Certainly, under ordinary conditions, there is no evidence that this can be true. Adaptation to low-calcium intakes results in more efficient absorption of dietary calcium. When the calcium intake is increased beyond normal requirements, the percentage of calcium absorbed is reduced. This is important since, if there were no limitations to calcium absorption, the excess of calcium absorbed beyond that which could be deposited in the bones would have to be excreted in the urine, and the capacity of the kidneys to excrete calcium is limited. Because of the relative insolubility of such calcium salts as the phosphate and carbonate in urine, high levels of urinary calcium may cause precipitation of these salts in the kidney resulting in the formation of kidney stones and injury to the kidney.

About five years ago Burnett *et al.* (5) reported instances of hypercalcemia and kidney injury in adults with peptic ulcers who were taking large amounts of milk and alkalinizing agents. The hypercalcemia was reduced by decreasing the calcium intake. In the past few years a number of reports have appeared from England and Scotland (6) presenting cases of so-called "idiopathic hypercalcemia" in infants. These infants, who were on cow's-milk feedings, were found to have excessive levels of calcium in the serum. They had been studied because of vomiting, loss of appetite, and failure to thrive. This condition remains a mystery. Several of the investigators have suggested that the combination of a high-calcium diet plus an unusual sensitivity to vitamin D might be responsible, but this is unproved. In this country, high-calcium diets and vitamin D supplements are fed to a large proportion of infants without any evidence of hypercalcemia or symptoms due to excessive calcium excretion in the urine. Certainly the problem needs further consideration.

SUMMARY

As the result of the cooperative efforts of biochemists, nutritionists, dietitians, pediatricians, agricultural chemists, dairy farmers, the milk industry, and government, high-calcium foods have become increasingly available for our children. American children can and the majority do receive a diet adequate with respect both to calcium and vitamin D. The deficiencies of vitamin D with resultant rickets so common two or three decades ago now are rarities. In the 1930's, nutritional surveys indicated that a considerable proportion of children were not receiving the amounts of calcium recommended by the National Research Council. At present, there is little reason to believe that calcium lack is prevalent in children's diets. Although efforts to promote the adequate intake of milk and milk products by children should not be slackened, we can be satisfied that great progress has been made in the more adequate provision of calcium in the diets of American children.

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Canned Water for Civil Defense

Dangers of drinking water contaminated by radiation and bacteria following atomic attack may be circumvented by the use of canned drinking water. Research has helped to eliminate the hazards encountered in canning water. By eliminating oxygen and adding an inhibitor, tin plate cans may be used without affecting the appearance of the product while preventing rust. Surface water with a *p*H range of 7.0 to 9.0 has been found most favorable for canning.

Nutritional Status of Adolescent Idaho Children

I. Evaluation of Seven-Day Dietary Records[1]

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IN THE Idaho phase of the Western Regional Nutritional Status study, dietary records, dental and physical examinations, and blood and urine analyses were obtained for school children fifteen and sixteen years of age in three Idaho communities. The dental phase of this study has been reported (1). This paper deals with the dietary intake findings.

Two communities, Boise and Nampa, were selected for study in the semi-arid southwestern section of Idaho. In the northern part of the state, Coeur d'Alene was chosen. Subjects from Rathdrum and Post Falls, towns approximately 10 mi. from Coeur d'Alene, were also included in this group. The population of Boise was approximately 35,000; the principal occupations of the family wage earners as listed by the subjects were skilled labor, clerical or sales, and professional or managerial. Nampa is 19 mi. from Boise in the same irrigated valley. Nampa's population is approximately 16,000, the majority of the wage earners being listed as farmers or railroad employees. Coeur d'Alene is a resort center, 300 air-miles north of Boise and Nampa, with a population of approximately 16,000; Rathdrum and Post Falls each have less than 1000 population. Occupations most frequently listed in the northern towns were lumbering and farming, skilled labor, and unskilled labor.

The subjects were school children fifteen and sixteen years old who had been reared in one of the communities studied. A total of 150 girls and 124 boys completed their dietary records. The children in Boise and Nampa kept their records during January, February, or March, and those in the Coeur d'Alene area during April or May of 1951. The nutritionists interviewed each subject to obtain information on food habits and customary diet. Each subject was then instructed to record daily food intake in common household measures (cups, tablespoons, teaspoons, inches, or other units where applicable). Written instructions and forms for keeping the dietary records for seven days were distributed to the subjects, with addressed, stamped envelopes in which to return them as completed.

The individual dietary records were tabulated in terms of portions per week for calculating total nutrient intake by punch cards. Nutrient content was calculated using the values in Table III in Agriculture Handbook No. 8 (2). Values for certain mixed dishes were calculated or obtained from other sources (3, 4).

AVERAGE NUTRIENT INTAKE

The average daily intake of calories, protein, calcium, iron, vitamin A, thiamine, riboflavin, niacin, and ascorbic acid for the children in each area is given in Table 1. Intakes of these nutrients were similar for the subjects in each area, in spite of geographic, occupational, and other environmental differences. The differences in the average daily intakes by sex were definite in each community. For all nutrients except vitamin A and ascorbic acid, the average daily intake was at least 45 per cent higher for the boys than for the girls; for vitamin A, the figure was only 26 per cent, and for ascorbic acid, 16 per cent.

A comparison can be made of the nutrient content of these diets with the Recommended Dietary Allow-

[1] Published with the approval of the Director, Idaho Agricultural Experiment Station, as Research Paper No. 377. This study was part of the Western Regional Research Project on the Nutritional Status of Population Groups in Selected Areas of Idaho, conducted with the cooperation of the Idaho Agricultural Experiment Station; the Human Nutrition Research Branch, Agricultural Research Service, U. S. Department of Agriculture; and the Idaho Department of Public Health. It was financed in part from funds appropriated under the Research and Marketing Act of 1946. Received for publication August 13, 1954.

[2] The authors wish to thank the nutritionists who aided in obtaining these data, Louise Rencher and Myrtle Adler.

TABLE 1

Average intake and standard error of nine nutrients consumed by children fifteen and sixteen years old in three Idaho communities

GROUP	NUMBER OF SUBJECTS	CALORIES	PROTEIN	CALCIUM	IRON	VITAMIN A	THIAMINE	RIBOFLAVIN	NIACIN	ASCORBIC ACID
			gm./day	*mg./day*	*mg./day*	*I.U./day*	*mg./day*	*mg./day*	*mg./day*	*mg./day*
Girls										
Boise	46	2136 ± 89	72 ± 3	1105 ± 65	10.5 ± 0.4	6259 ± 188	1.07 ± 0.06	2.02 ± 0.11	12.5 ± 0.6	66 ± 5
Nampa	54	2101 ± 68	71 ± 3	1060 ± 51	10.8 ± 0.4	5300 ± 136	1.04 ± 0.03	1.86 ± 0.08	12.5 ± 0.5	73 ± 5
Coeur d'Alene	50	2039 ± 84	71 ± 3	1072 ± 50	10.2 ± 0.4	5086 ± 135	1.04 ± 0.04	1.88 ± 0.08	11.8 ± 0.4	78 ± 5
Boys										
Boise	44	3035 ± 102	102 ± 3	1515 ± 85	15.9 ± 0.5	7532 ± 193	1.56 ± 0.06	2.68 ± 0.10	17.1 ± 0.6	78 ± 5
Nampa	40	3022 ± 123	102 ± 4	1544 ± 106	16.6 ± 0.7	6940 ± 224	1.51 ± 0.06	2.72 ± 0.17	18.5 ± 0.8	81 ± 7
Coeur d'Alene	40	3267 ± 125	108 ± 5	1621 ± 109	16.5 ± 0.7	6557 ± 139	1.70 ± 0.07	2.85 ± 0.17	17.9 ± 0.8	95 ± 7

* Standard error based on the variance of average daily differences between subjects. Individual daily variation for the same subject has been ignored.

ances (5, 6). The average daily intake for all girls was somewhat below the 1948 allowance for sixteen-year-old girls in calories, protein, thiamine, and ascorbic acid (12, 5, 12, and 10 per cent below, respectively), and was definitely below the recommendation for iron (30 per cent below). When the Recommended Dietary Allowances were revised in 1953 (6), the recommended intake of calcium for girls was increased from 1.0 to 1.3 mg. per day. The average daily intake of calcium for these girls was 1.08 mg.—somewhat higher than the older standard but 17 per cent below the latest recommendation. For the boys, the average intakes were below the 1948 recommended allowances for sixteen-year-old boys in calories, thiamine, and ascorbic acid (18, 6, and 15 per cent below, respectively). In 1953, the recommended intake was increased for thiamine (1.7 to 1.9 mg.) and niacin (17 to 19 mg.). In terms of these new recommendations, the average intake of the Idaho boys was 16 per cent below the standard for thiamine and 6 per cent below for niacin.

DISTRIBUTION OF INDIVIDUAL INTAKES

Of greater interest to nutritionists than the average intake of a group is the number of the subjects eating diets furnishing various levels of the different nutrients. Figure 1 shows the percentages of the boys and girls whose average diets supplied less than the indicated amounts of the nine nutrients studied. The 1953 Recommended Dietary Allowances as well as two-thirds of the allowance for sixteen-year-old boys and girls are indicated for each nutrient, but the cumulative charting permits ready comparison with any other standard chosen. The cumulative frequency curves show that the range of intakes was greater for the boys and that the intakes reported most frequently for the boys were higher than for the girls for all nutrients. These differences by sex were greatest for calories, iron, thiamine, and niacin and were small for vitamin A and ascorbic acid.

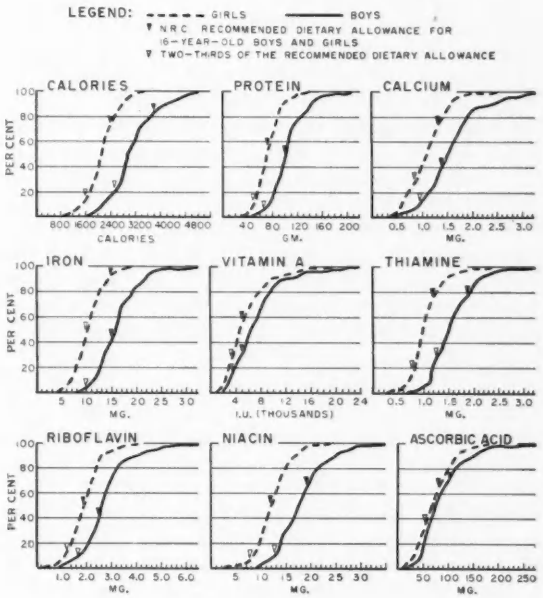

FIG. 1. *Percentage of subjects with average daily intakes of nine nutrients below the levels indicated.*

Caloric Intake and Weight

Over 80 per cent of the boys and 70 per cent of the girls reported diets which supplied fewer than the recommended number of calories. Approximately 17 per cent had less than two-thirds of the recommended caloric intake. Little relationship existed, however, between caloric intake and weight (Baldwin-Wood height-weight-age standards [7]). Although approximately 17 per cent of the subjects were 10 per cent or more below standard weight and 17 per cent reported caloric intakes below two-thirds of the allowance, only 2 per cent had a low caloric intake and were underweight. Conversely, whereas 23 per cent of the children were 10 per cent or more

overweight and 22 per cent had caloric intakes greater than the recommended allowance, only 4 per cent were overweight and consuming more than the recommended calories. The majority maintained satisfactory weight on a diet supplying fewer than the recommended number of calories (approximately 2100 for the girls and 3100 for the boys). A larger percentage of boys received less than the caloric recommendation than had intakes below the recommended amount of the other nutrients. The kind of diet eaten by the boys made it possible for them to obtain the needed nutrients with fewer calories than recommended by the National Research Council. This would not necessarily be true for all types of diets eaten by teen-age boys.

Iron Intake

The average daily iron intake was less than the allowance for a large percentage of the girls. Only 8 per cent of the girls had iron intakes which met or exceeded the recommended intake, and 50 per cent were below two-thirds of the recommended allowance. Approximately 60 per cent of the boys had iron intakes which met or exceeded the recommendation, and only one boy reported a diet which supplied less than two-thirds of the allowance.

The recommended allowance of iron for the boys and girls in the age ranges thirteen to twenty years is 15 mg. The diets selected by the majority of the boys furnished this amount, but the girls in general ate less food than the boys and ingested correspondingly less iron.

The biochemical tests made on the blood and serum of these subjects did not indicate that girls require an iron intake as high as the recommendation, however. None of the subjects in this study had hemoglobin values indicative of anemia, the lowest hemoglobin value for a girl being 11.5 gm. per 100 ml. and for a boy, 12.8 gm. Serum iron values for the girls were somewhat, but not significantly, lower than those of the boys (8). A positive correlation of 0.33, statistically highly significant, was found between iron intake and hemoglobin values when the data for the boys and girls were combined. This correlation was spurious, however, because it resulted from the fact that the iron intakes and the hemoglobin values for the boys were higher than for the girls. When the relationship of iron intake and hemoglobin values was calculated for the girls and boys separately, the correlations were insignificant (-0.01 for the boys; -0.03 for the girls). The correlation coefficient between iron intake and serum iron was 0.17 for the boys and 0.25 (highly significant) for the girls. The correlations between iron intake and serum iron indicate that girls may absorb ingested iron more effectively than boys.

Intakes of iron substantially below the recommended allowances for girls have been reported by a number of workers. Only 7 per cent of the girls sixteen to twenty years of age studied in the Northeast Region (Maine, Rhode Island, New York, and West Virginia) reported intakes (10.8 mg. average) which met or exceeded the recommended allowance. (9). Schlaphoff *et al.* (10), in a study of twenty-one girls fourteen and fifteen years old, found iron intakes as calculated from three-day food records varying from 6 to 15 mg. per day, whereas the hemoglobin values ranged from 12.0 to 15.0 gm. per 100 ml.

CORRELATIONS OF NUTRIENT INTAKES

Correlation coefficients were calculated for the individual intakes of all pairs of nutrients; highly significant correlations were found for all pairs. Particularly high correlations (0.88 and 0.87) were found between calories and protein, between calcium and riboflavin, and between protein and riboflavin, as would be expected with diets containing liberal amounts of dairy products. The correlation coefficients found in comparing the intakes of calories, protein, calcium, iron, thiamine, riboflavin, and niacin ranged from 0.52 to 0.88, with only three of these twenty-one comparisons having a coefficient lower than 0.63. The correlation coefficients found between vitamin A or ascorbic acid and the other nutrients were of a lower magnitude, ranging from 0.33 to 0.51, with only two of these fifteen comparisons having a coefficient higher than 0.46, indicating that special attention must be given to supplying adequate sources of vitamin A and ascorbic acid in the diet.

COMPARISON WITH RECOMMENDED DIETARY ALLOWANCES

The Recommended Dietary Allowances were not designed to be considered as requirements for the various nutrients, but were planned to include a "margin of safety," the principle and philosophy of which has been publicized quite widely. On the other hand, intakes as low as one-half of the recommended allowances cannot be expected to promote health in most individuals, and intakes below two-thirds of the allowances would allow little or no "margin of safety" to take care of emergency needs, individual differences in absorption and utilization, or losses in food preparation and storage.

The average daily intakes for each subject were compared with the 1948 Recommended Dietary Allowances for a person of that age and sex. Those of the fifty subjects who were less than 15½ years of age were compared with the recommendations for children 13 to 15 years old, and the intakes of the older subjects were compared with the allowances for children 16 to 20 years of age. Of the 274 subjects, 76 reported diets which supplied less than one-half of the allowance of one or more nutrients. Forty-two had diets providing less than one-half of the recommended intake of only one nutrient, 17 of two

TABLE 2

Correlations between individual intakes of nutrients and the serum levels of corresponding factors

COMPARISON	IDAHO (15- and 16-year-old school children)	MAINE (junior high school children) (11)	NEW YORK (school children) (11)
Dietary ascorbic acid and serum ascorbic acid	0.52*	0.42*	0.24*
Dietary vitamin A and serum carotene	0.24*	0.14	0.15
Dietary vitamin A and serum vitamin A	0.13	0.05	−0.03
Dietary riboflavin and serum total riboflavin	0.14	—	—
Dietary riboflavin and serum free riboflavin	0.11	—	—

* Correlation significant at the 1 per cent level of probability.

nutrients, 9 of three, and 8 of four or more nutrients. Forty-eight subjects consumed less than half the recommended daily intake of ascorbic acid. The numbers of subjects who reported diets supplying less than half of the recommended amounts of the other nutrients were: vitamin A, 35; iron, 18; calcium, 13; calories, 8; riboflavin, 7; thiamine, 6; protein, 6; and niacin, 4. Nearly twice as many girls as boys reported these low intakes.

SUPPLEMENTS

The intakes discussed above include only the food sources of nutrients. Because of the widespread use of dietary supplements, it seemed possible that some of these low dietary intakes would be corrected. Twenty-six subjects reported taking one or more forms of dietary supplements. Only two of these were in the group whose diets supplied less than half of the recommended daily intake of some nutrient; both had diets low in ascorbic acid, but both were taking only yeast as a supplement. Few of the subjects taking supplements were eating diets which supplied less than two-thirds of the recommended intake of the nutrient or nutrients which would be affected by the supplement. The number of subjects taking a supplement which would affect the intake of a given nutrient was as follows (with the number of those subjects whose reported diets supplied less than two-thirds of the allowance of that nutrient given in parentheses): calcium, 8 (0); iron, 11 (4); vitamin A, 19 (0); thiamine, 17 (1); riboflavin, 15 (0); niacin, 12 (0); and ascorbic acid, 13 (1).

CORRELATIONS OF DIETARY INTAKES AND SERUM LEVELS

Correlations were determined between individual intakes of nutrients and the serum levels of corresponding factors (Table 2). Statistically significant correlations were found between the dietary intake and the serum level of ascorbic acid and between the intake of vitamin A value and serum carotene, but the correlation between the intake of vitamin A value and serum vitamin A was not significant. Riboflavin intake was not significantly correlated with either serum free riboflavin or serum total riboflavin.

Correlations between dietary intakes and serum values have been reported from the Cooperative Nutritional Status Studies in the Northeast Region (11). Since junior high school children were studied in Maine and New York, values from these studies would be comparable with those from this study. The correlations determined in these studies are included in Table 2. The values are similar in the three studies, with the exception that a significant correlation was found between dietary vitamin A and serum carotene in the present study, but not in the others.

SUMMARY

Two hundred seventy-four school children fifteen and sixteen years of age in three Idaho communities kept records of their measured food intake for seven days. The average intake per subject of nine nutrients showed little variation by community, but a pronounced difference by sex. Boys consumed substantially more of all nutrients than the girls.

The average intakes per subject were 90 per cent or more of the National Research Council's 1948 Recommended Dietary Allowances except for iron, calories, and thiamine for the girls and calories and ascorbic acid for the boys. Average intakes of calcium for the girls and of thiamine for the boys were more than 10 per cent below the higher 1953 allowances. Few of the girls met the recommended allowance for iron, but none had hemoglobin levels indicative of anemia.

Three-fourths of the subjects reported diets which did not supply the recommended number of calories, but the deviation from standard weight was not related to caloric intake. The percentage of boys who received less than the recommended caloric intake was greater than the percentage who received less than the recommended amounts of the other nutrients.

One-fourth of the children reported diets which supplied less than one-half of the recommended allowance of one or more nutrients. None of the dietary supplements taken by these subjects affected the nutrient or nutrients in which the subject's diet was low.

Ascorbic acid and vitamin A were the nutrients furnished in amounts less than one-half of the

Recommended Dietary Allowances for the largest number of subjects. Correlations of the individual intakes of all pairs of nutrients also indicated that, within the food patterns observed in this study, special attention must be given to supplying adequate food sources of ascorbic acid and vitamin A in the diet.

Correlations between dietary intakes and the serum levels of corresponding factors are reported.

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Fresh California Dates

Food news is being made by fresh California dates, for production is at last beginning to keep up with demand. Fresh dates are found in all major markets, packed in convenient packages. For homemakers, the *unpitted* fruit comes in 8-oz. and 1-lb. Cellophane trays and in 1-lb. bags; for institutional use, there is a 15-lb. "flat." The *pitted* fruit is packed in 8-oz. and 1-lb. trays, 12-oz. and 1-lb. bags for home use; for quantity buyers, it is available in 12-lb. "flats."

Fresh California dates are smooth, even textured, and unscarred. They hold their individual shape firmly and do not form a sticky mass. The fruit is amber colored, plump, luscious, and meaty, and as a natural sweet is unsurpassed. Fresh dates also carry excellent nutritive values:

Carbohydrates	72.6%
Proteins	2.1
Fats	0.6
Moisture	23.0
Fiber	2.3
Sugars	61.0
Calcium	0.065
Phosphorus	0.056
Iron	3.6 p.p.m.
Copper	3.8 p.p.m.

In addition, fresh dates are a good source of potassium, manganese, magnesium, and chlorine, and a fair source of pro-vitamin A and thiamine.

Recent studies* have shown interesting developments as to reducing sugar and sucrose content of fresh California dates. For all practical purposes, it appears that, in general, the soft varieties (Barhee, Halawy, Khadrawy, Medjool, and Saidy) contain little or no sucrose; the dry variety (Thoory) have a substantial amount; while the semi-dry varieties (Deglet Noor and Zahidi) follow the middle course. In planning therapeutic diets, then, this information can be put to practical use.

They also offer the advantages of variety and good taste, as well as good nutrition, when used in hospital dietaries, either "as is" or as delightful ingredients in recipes.—*Contributed by Ilma Lucas Dolan, Dietitian, California Foods Research Institute, San Francisco.*

* Cooks, J. A., and Furr, J. R.: Sugar in dates. Reprinted by U. S. Department of Agriculture from Proc. Am. Soc. of Horticultural Sci., Vol. 61, 1953.

Current Comment

The Dietitian's Contribution in the Care of the Mental Patient[1]

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In mental hospitals, we are serving persons just as sick and just as much in need of trained care as those in other types of facilities. Physiologically and psychologically, all of us pay the penalty of poorly prepared food, of inadequately balanced meals, of excesses and insufficiencies, and of improper habits. We may cover up our distress by reaching for nostrums. We may even try to convert ourselves to an alien discipline by inviting gastronomic celibacy through restricting ourselves to yogurt and blackstrap molasses. The well person has his prerogatives, injudicious as he may be in the use of them. He must be approached with education. But the sick person reluctantly abdicates most of these prerogatives when he is hospitalized. He demands your knowledge and technique in the total effort to make him well.

The mental institution, like other hospitals, exists for the sole purpose of the treatment, care, and rehabilitation of its clientele. Our common objective is to serve that patient so effectively that he may return to his proper place at home and in the community. Should this not be possible in every instance notwithstanding our combined efforts, then we must still help such a patient to reach his most proficient level. The deep scars of mental illness and defect may prolong a patient's return home indefinitely. Nevertheless, we are challenged to employ our resources toward his recovery of confidence and self-respect by showing him that he has a useful place among us, regardless of his destiny. He is not a customer to speed on his way. He is our guest who may be staying.

DEPENDENCY OF SPECIALIZATION

Our present culture tends to divide us more and more into specialized and interdependent roles. At home, even the talented amateur who is handy with tools needs technicians to repair the radio or television. We no longer carry air pumps and repair kits in our cars to fix flat tires. After an unfortunate experience, we promise ourselves to call in the plumber the next time we are confronted with frozen water pipes or a leaky faucet. Although we may salvage our pride of coping with the primitive by developing a green thumb, we must face the fact that we make poor Robinson Crusoes.

In the socialized groupings of institutional life, we are even more specialized because of highly developed functions. There is next to no self-sufficiency, and our services must be smoothly coordinated for a common purpose. In fact, we are so integrated in this business of serving the patient that a deficiency or failure in any one function may influence or spread like a contagion. Factionalism can disrupt the discipline of necessary routine. Waste and abuse will jeopardize the economy. Standards of performance of other services can even be impaired.

We are involved in a highly complicated relationship that makes us closely dependent on one another. This mutual dependence rewards us with security and specialized comforts. Furthermore, this interrelationship in which the patient himself is a part predicates a social value on each of us. Life becomes purposeful as we accumulate these social values. Recognition of them constitutes a measure of success and, however small yet tangible these values may be, they build up our confidence and self-respect.

What then is the ultimate contribution you and I can make in our particular type of public service? We help the patient to regain faith in himself and others. We create and build up the social values of those less privileged by showing in our own example that we have faith in the dignity of man, regardless of his existing condition or status.

With this over-all philosophy to guide us, let us consider the immediate functions of the mental hospital dietitian. Speakers at past meetings and your own literature have firmly established these under the headings of administrator, teacher, and therapist. To these I would add only the concept of public service which applies equally to the entire institutional team.

THE DIETITIAN AS AN ADMINISTRATOR

As an administrator, the dietitian is directly responsible for maintaining standards of performance that are prerequisite to smoothly conducted and efficiently executed service. In this phase of your functions, you are in business with considerable quartermaster detail and schedules that have only narrow margins of discretion. When hitches occur, you must have the resources to improvise promptly and soundly, so that the series of operations leading to the ultimate consumer do not falter and the end product remains acceptable.

[1] Presented at the 37th Annual Meeting of The American Dietetic Association in Philadelphia, on October 28, 1954.

As an administrator, the dietitian is the key departmental head who must have a voice in the overall planning of food production and purchase. She is the watchdog of quality, of timeliness, and of sensitivity to trends in the interest of the institutional budget. In this essential and important hospital service, she does more than help to stretch the taxpayer's dollar. She packs substance into it and with the advantage of mass production gains her reputation in serving such a good meal at such a modest cost.

To do this, the dietitian may challenge the institutional farms when they are inclined to become overzealous in the statistics of production. She must temper the tendency to reduce variety to a state of monotony when the plethora of surpluses invites a specious economy. She must be able to absorb with flexibility the inevitable pressures dictated by expediency, and, as if all this were not enough, she must have her hands on the pulse of the dietary organization, gauging the cause of any irregularity that may threaten to impede its even performance along the entire line of service. She must be sensitive to any friction at innumerable points of contact, both inside her department and between her personnel and those of cooperating departments. She must anticipate the potentialities of friction and obviate them by a factual interpretation of her own functions. Since overlapping cannot be avoided, she must at all times be sympathetic to the administrative headaches of collaborating departments. In this way, lines of authority and coordination of services may be defined dispassionately at the top level before the ground swell of discontent creates those abominable intramural barriers.

THE DIETITIAN AS A TEACHER

As a teacher, the mental hospital dietitian is the authority on the science of nutrition and the art of feeding. She may be the only professional person in the dietary department. She must have the faculty of indoctrinating the old-line employee whose routine has sufficed for years. She must at the same time be able to train the new employee whose acquaintanceship with food production may be quite rudimentary. In either case, the balance of practical logic and of authoritarian direction must be neatly adjusted to the degree of receptivity of the employee. Teaching based on rationale invites the best in the employee. He should be challenged to make practical suggestions as his experience accumulates. In training, a job analysis is basic to understanding performance but should be used also as an incentive to promotion as the employee gains proficiency.

When the patient aide is involved in this training, the focus must be on helping him, not on his helping you. This is in keeping with the therapeutic concept that every direct contact with the patient should be oriented toward his rehabilitation. Supervision in the medical sense loses its meaning and our expressed purpose of care becomes a subterfuge if patient activity is purely directive with the employee on the sidelines. Let us not forget that the individual patient is purposefully engaged by medical direction primarily for his own welfare and only secondarily for the operation of the dietary department.

Your patient aide depends on you in the progressive steps of his rehabilitation. When assigned to you, it becomes your personal obligation as teacher and therapist to help him to the initial stage of even minor proficiency and to encourage him to advance to greater competency. Such a task would be simple enough in the average classroom, but the measure of your ability as therapist and the efficacy of your organization in this respect will be shown in bringing out the best in the inhibited patient. This can be done only by working *with* him and not working him.

Also, should the patient level off to become a valued routine aide, he may readily lose the incentive to progress and should be reported to the clinical director for further disposition. Too often the demands of institutional economy result in the production of automatons who are actually therapeutically idle.

The criterion of an intensive treatment program of a mental hospital is not only the extent of direct medical and nursing care but also the reduction of deteriorating idleness and monotony reflected by the follow-through of balanced, stimulating activity. Thus, rehabilitation makes sense and the thoughtless criticism of cheap labor can be refuted.

In dealing with patients within your own department, it is incumbent on you to appreciate the significance of psychiatric conditions. This means somewhat more than a familiarity with diagnostic terms and their usual symptoms. It is easy to develop by experience alone a popular glossary of pseudoscientific slang. You can even learn by the use of common sense the practical management of patients. But, as a professional person with a contribution to make, you must be a student in this type of institutional environment. This implies that you further your own formal indoctrination by attending selected courses of the nurses' training program and by covering sufficient medical staff meetings to get the feel of patients' illnesses and needs.

When you are able to dispel for yourself any lingering apprehension or the feeling of mystery regarding the mentally ill patient and when you begin to feel at home in his presence, you are then ready for the therapeutic contribution. It is then that you can become a full-fledged member of the institution's therapeutic team. You will realize the strangeness of that outside world which was unable to understand the patient. You will be able to sense the background that provokes his aggressiveness or passivity, his emotional outbursts or mechanical compliance, his almost incomprehensible fears, and his pathetic

efforts to deal with unrealities that come true to him. You will find the mental patient a very natural reactor to his own type of stress. Because you are in authority, he will try to accept you, but not until you can know and accept him will the relationship be most favorable for your helping him.

THE DIETITIAN'S CHALLENGE

With a sincere and knowledgeable interest in the patient's welfare, the mental hospital dietitian contributes to the therapy of the institution at large by virtue of the science and art of her profession. Her armamentarium consists generically of one item—food. But to use it effectively as a therapeutic tool, she must deal not only with its scientific evaluation but also with its psychologic connotations. A failure of service occurs alike whether there is an item of nutritional deficiency, a factor of irregular distribution, or an element of unattractive consumption. Perhaps in no other sphere of service does there exist so much personal prejudice as in the preparation and serving of food. To be confronted with only a few complaints really becomes a signal honor to the dietary department which must take care of so large and so varied a community as the average mental institution. In any captive group, be it a summer camp, the military service, the penal system, or the hospital, it is so easy to project one's discontent on food!

By and large, however, the "makings" of a good meal are found in all mental institutions. Successful dietary management lies in proper preparation and efficient distribution. The scheduled menu does not tell the whole story. What about last minute substitutions and even omissions? Was the bread well baked? Were the vegetables adequately prepared and thoroughly washed? Was the roast overcooked? Were the beans and potatoes undercooked? How warm was the oatmeal? Did only a few patients get all of the meat in the stew? Why was so much pudding left untouched? And, how well was the food protected and how bad were the flies?

I believe the rank and file of institutional personnel from the superintendent down should sit at the patients' table for an occasional meal. If they are reasonably satisfied, then it could be a rule of thumb that the patient was adequately served.

THERAPEUTIC SETTING

It is almost axiomatic that mental patients tend to regress more rapidly than well persons if deprived of adequate stimulus. More than that, when treated as inferiors, they will react at more primitive levels. The foul smelling "snake pits" of previous years were due to compounding the felony of idleness with overcrowding and the lack of any program beyond elementary custody. A scarce two hundred years ago it was with a great deal of apprehension that mental patients were relieved of manacles and chains. Even today, fear is often expressed regarding provision of colorful draperies and other positive psychologic essentials on the institutional ward. It has been only within our time that varied pastel shades have replaced the monotonous tan of corridors and rooms. Yet in the dietary service, we must not continue to take it for granted that patients should heap up an indiscriminate mess on their plates, that they should gorge themselves on ten slices of bread, that they should eat on the wards where they live, and that they must eat in haste and have improper table habits.

Regardless of the pressure of routine service, notwithstanding the limited variety available in mass feedings, and in spite of the difficulties in proper socialization to make the meal congenial, a therapeutic setting can still be achieved. Many cafeterias for patients now have suitable background music. Long tables and benches can be replaced by small tables, placed individually or grouped together, with corresponding chairs. Breakfast, at least, offers the possibility of a wider selection by use of short-order equipment at the cafeteria counter. The dietary and nursing departments can lend personnel to supervise not only the traffic but the needs of the patients. The dietitian, together with the clinical director and head of the nursing service, should go over suggestions to be activated in the interest of promoting a healthy emotional climate.

This collaboration in behalf of the dietitian's contribution should extend to the most distant point of feeding. It is just as important for key personnel in the dietary department, including the cooks, to visit a ward dining room occasionally as for the ward physician to inspect the kitchen and food handlers.

PUBLIC SERVICE

The final contribution of the mental hospital dietitian and her staff is that of a public service. This concept is often overlooked or misconstrued among the harassing details of routine. It is possible to become so conditioned that one is constantly on the defensive to any remarks or suggestions. This is understandable when the public is inclined to approach its servants only with grievances. The positive accomplishments may even be taken for granted or damned with faint praise.

Certain positive returns in public service, however, transcend the pettiness of everyday trials. These returns may not appeal to everyone, and their values will vary according to temperament and the sincerity of ideals. Above all, one must have a natural sympathy and inclination to help one's fellow man. This guiding spirit in rendering service must weather any tendency to become cynical in the face of scanty appreciation or even projected hostility. The firmness of your own convictions will, in the end, assure you a satisfaction of the soul that is earned by a job

well done. That feeling of accomplishment in helping others is, I am certain, far above any of the more tangible incidences of performance, such as lowering the per capita cost by a few decimals.

Public service which must eschew self-aggrandizement to maintain its integrity offers a measure of security in exchange for glittering emoluments. This security involves a steadiness of work and regular paydays. It is guaranteed as long as the society of citizens with its culture and its interdependence exists. It is of a communal type that binds you together with your associates. In fact, it is as benevolent and fraternal as you may care to have it. You are a member of a large family organized and devoted to a common purpose.

There is also a certain dignity of position and office in your group. Whatever prestige that is inherent and acquired further is in the end actually delegated to you by those you serve. This circumstance should keep you humble when performance by the book appears to give you license to become bureaucratic.

In summary, the mental hospital dietitian is a member of the institutional team and has the resources to function as administrator, teacher, and therapist. As an employee in public service, she joins her colleagues in maintaining a noble tradition of helping others.

The rules are simple and clear for a well prepared and well served meal. Basic procedures cannot be compromised for long without lowering standards. Above and beyond this, is the psychologic influence of personal touch which will carry your distinctive trademark of performance. Regardless of specialized functions, all of us must deal with the total personality. Cultivate this touch in all relationships and your contribution in the care of the patient will be complete.

Nutrition in Mentally Deficient Children[1]

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The mentally retarded child is not different from other children, except in degree. His chronologic age may cause him to be placed in situations beyond his psychologic abilities. On the other hand, attention focused on the psychologic limitations may cause one to forget the youngster's physiologic demands. Only a certain few of the mentally retarded have both deficient physiologic and psychologic mechanisms.

While, due to my experience, I may think primarily of the mentally deficient child as an institutionalized subject, the underlying basic factors concerned with his proper nutrition are the same whether he is in his own home or in an institution.

Nutrition is neither the cause of mental deficiency nor is it the cure. Good nutrition, however, is a way station through which I am sure one must travel if one is to gain for the defective the greatest improvement now possible using present-day techniques.

For proper nutrition, the mentally deficient child must have sufficient food, properly selected, properly prepared, and properly fed to him. This statement may sound too elementary for inclusion here; nevertheless, it is worth emphasis in connection with the mentally defective.

The fact that the mentally retarded often come from sub-standard home situations creates a possibility that the family food supply may be inadequate, either through lack of sufficient funds or through lack of household management. If the child is institutionalized, there is not necessarily insurance that sufficient food is served the patient. I believe we are all familiar with the wide variations of food supply that can occur in institutions and sometimes even within the structure of one institution.

Proper food selection may be difficult to obtain for a mentally defective child either in his home or in an institution. Not only may there be factors of cost and/or apathy, but, in addition, there may be such factors as the child's rejection of certain foods and supposed or real food idiosyncrasies. The mentally defective child frequently will show strong resistance to the introduction of new foods. Carelessness or overprotectiveness by those who feed him may permit him to remain on a bland or unbalanced diet below his need. Frequently, the severely defective child is kept on the bottle far longer than necessary.

Food for the mentally defective child should be properly prepared. By this is meant not only properly cooked, but also properly served in a manner that the child can eat it. Americans have always been notorious for waste, and American cooking, especially institutional cooking, has a reputation for wasting food values. It would seem unnecessary to recall the potatoes put to soak all night before cooking for the next noon-day meal, the stews that were cooked for hours and hours, and the vegetables that were cooked in large quantities of water and drained. Yet unfortunately even today these practices are still followed.

A solid piece of beef may well be unchewable, unswallowable, or indigestible to a mentally defective child, but that same chunk properly prepared in a ground condition may be desirable food for him.

[1] Presented at the 37th Annual Meeting of The American Dietetic Association in Philadelphia, on October 28, 1954.

The range of foods, both cooked and raw, that can be served increases rapidly if one will only take the time and effort. For instance, grinding the various foods so that they have a form the defective child can eat often makes possible his eating a balanced diet.

Color should also be considered in the meals for this type of child. Children like color, and a meal that is colorful is more interesting and stimulating to this group than a drab or colorless plate or bowlful of food. I do not mean that the cook should become ultra-artistic; rather, she should be encouraged to put a little thought to the matter of color and enhance those colors which exist in the foods.

The mentally defective child should have some sweets in his diet daily. One must not lose sight of the fact that we are dealing primarily with children and that most children enjoy the taste of sweetness.

TECHNIQUES OF FEEDING

Proper feeding of the mentally defective child requires time, patience, and ingenuity. It may be a messy job that may try the patience. Often the patient aide in an institution proves a better feeder than the paid employee. Sometimes insufficient time is permitted the child to empty his mouth before another spoonful is offered. The size of the spoon is frequently too large for any one mouthful. The chore of feeding too many patients may be assigned to the feeder with the result that he becomes engaged in a losing race against time and temperature and is tempted to try to cram the food into this patient so that he can get to the last patient before the food is completely cold.

The proper manner of feeding the mentally defective must include consideration of such elements as whether to let the child feed himself or to feed him, the position of the child being fed, the implements used, and even the emotional atmosphere. Often a child is deprived of a chance to learn to feed himself because feeding him is faster and less sloppy. The most helpless child may be fed in a supine position because it is easier, even though he could sit up and might even participate in the feeding process.

The youngster with an associated palsy or incoordination may show increased ability to feed himself if spoons and utensils are adapted to his particular use. Sometimes this may be accomplished by increasing the diameter of the shank of the spoon or bending the tilt of the bowl of the spoon. Many of the devices used in feeding crippled and cerebral palsied children are adaptable for use in specific cases among the mentally retarded.

The emotional atmosphere of feeding time is important. Often in a household meal-time is a time for expressing all the moment's hostilities and resentments. This tendency may be brought nearer to explosiveness by introducing a mentally retarded child into the scene. Thus, during eating the child may be subjected not only to verbal assaults but also to actual physical abuse as tempers boil over.

Unfortunately, these points are likely to be overlooked in nutritional programs and frequently, if not recognized and corrected, can readily thwart the efforts of a whole team trying to improve a mentally defective child's nutrition.

GROWTH FAILURE

It is important that the mentally defective child be kept under close scrutiny to ascertain how far from the so-called norms he is in height and weight and also to protect him if possible from further deviation. There are undoubtedly numerous methods of following the child's growth and development. My experience has been with the Wetzel Grid (1), which is, in my opinion, a satisfactory method. Our experience with the Wetzel Grid over a five-year period involving more than nine hundred children under eighteen years of age leads us to feel that this technique is sufficiently accurate to make possible easy recognition of growth failure, simple enough for relatively easy institutional application, and quickly interpretable into figures on caloric requirement which are valuable to the dietitian. Such data may be obtainable by other methods only with greater effort. The technique has also been of value when adjuvant medications have been used to stimulate further growth.

It has been our feeling that the mentally defective child, like the normal child, enters into growth failure first by a slowing of weight gain and then finally by stoppage of height gain. Return from growth failure generally is heralded first by weight gain and then height gain. We have felt that the texture of the skin and hair also furnishes a quick means of gross appraisal of nutrition. Growth failure once firmly established may require several years of intensive treatment for complete correction and if uncorrected tends to become fixed as part of the patient's general syndrome.

Correction of nutritional deficits and the attendant growth failure in the mentally retarded child is not accomplished by the efforts of the nutritionist and her staff alone but only by the combined efforts of the physician and the others involved in the child's care and training.

A basic consideration must be the question of whether the child is getting enough food. The child in growth failure may need as much as 500 additional calories per day above the requirements of a child of the same height and weight in good nutrition. Sometimes a little courage is required to set such a high caloric intake and to insist that the child eat that much, but the resultant growth gain is often spectacularly gratifying.

One of the handicaps in dealing with nutritional programs of institutionalized children is the procure-

ment of sufficient protein. Generally speaking, the mentally retarded child requires and does best on a relatively high protein diet in ratio of at least 15 per cent protein, 20 per cent fat, and 65 per cent carbohydrate. Often monies, budget, and purchasing restrictions make maintenance of such a ratio difficult. I am not prepared to state to what degree the protein requirement must be from animal protein and how much can be vegetable protein.

EMOTIONAL PROBLEMS

The role of emotional factors in nutrition is important among this group of children. Many people, physicians included, often tend to minimize the emotional life of the mentally retarded. Apparently some believe the tag of mental deficiency destroys other human values. This is not true. The mentally defective child has an active emotional life frequently complicated by frustrations of all types. His emotional problems may be concerned with such things as why he, the defective child, cannot do what his siblings do, why he cannot go to school, why he is shunned by other children, why he cannot achieve if he is in school, and so on.

Thus we find that the nutrition and growth pattern is often altered in a manner not correctable by dietary measures alone. Correction may require the best efforts of the physician, the psychologist, the school teacher, and the parent or the parental symbol (attendant if the child is institutionalized).

The change from home to an institutional environment may cause home-sickness that may be sufficient to start the child on a course of nutritional failure. For this reason, the nutritional program for the youngster should start with his admission to the institution instead of some time later.

On the other hand, the institutional environment sometimes meets the child's total needs better than his previous environment. In these cases, his growth pattern and nutrition will advance rapidly, and he may show the same recovery curves anticipated in rapid recovery from an acute illness.

Occasionally the growth pattern after admission to an institution may help explain some of the patient's history. One such case was a boy from a poor home situation. The child had been in the habit of going through garbage cans. The recovery curves he showed following admission to the institution were so startling as to suggest that he had searched the garbage cans for reasons of hunger rather than due to his deficient mentality. Psychologic study indicated later that he actually was of moron intelligence (2).

Some of the lower grade mental defectives are subject to considerable restlessness at night, and during the day are often preoccupied with hand sucking. Vomiting may be a disturbing habit. Generally, as their nutritional status improves, these symptoms tend to lessen or disappear.

MENTAL DEFECTIVES WITH OTHER DISORDERS

Certain specific clinical types of the mentally defective deserve an additional bit of attention because their nutritional status is a reflection to some extent of the underlying syndrome.

The mentally deficient child with associated cerebral palsy may be undernourished, partly as a result of the difficulties encountered in feeding and partly because of his physical handicaps. Swallowing is often difficult. Generally, the parent tends to focus too great a degree of attention on the cerebral palsy and too little on attempting to maintain adequate nutrition. The mere fact that the child "seems to eat well" is often mistaken for sufficient food intake.

The mongoloid defective may show a generalized roughened, dry skin and a tendency toward mucous membrane irritation around the eyes, mouth, and nares. Our feeling has been that this is correctable to a considerable degree if the nutrition can be as it should be. Generally, the mongoloid shows a polyvitamin deficiency that can be corrected if large doses of vitamins are given over a long period of time. The mongoloid, nutritionally, appears to me to be an individual who becomes a short stocky person because of a persistent, prolonged growth failure due to a protracted nutritional disturbance. Each day's growth failure is added to the total growth failure he suffers. Sometimes medically supervised administration of testosterone propionate in very small doses will give a height-growth picture similar to that of a normal child for a year or so. The increased height places the youngster in the more medial types of body contour.

The epileptic defective may show acute nutritional failure if he has very frequent, uncontrolled seizures. The epileptic child tends to develop bizarre patterns of food preferences. He may show irritabilities that reduce appetite and total food intake. Generally, the maintenance of good nutrition in such a child is not attained until some fair degree of control of his convulsive disorder is achieved. The drugs available today, however, make control of seizures more than just an idealistic hope.

The nutritional picture of the defective suffering from progressive muscular dystrophy is interesting and is an index of the activity of the muscular degeneration, although in my experience, it has not been correctable by any means now available.

Correction of the growth pattern of the cretin requires, of course, the supplementation of thyroid. If this is started in infancy and continued, the change in growth pattern can be considerable by late adolescence. However, the stimulation of intellectual function, although it does occur, is generally insufficient to warrant hope of a normal life.

Recent years have shown the identification of the defective known as the "gargoyle." This condition involves probably a lipoid dysfunction and previously

was frequently mistaken for cretinism. The work to date, insofar as I know, does not permit much speculation for nutritional help beyond that for just any other child.

SUMMARY

It appears that the nutritional picture of the mentally defective child follows generally the requirements of the normal child as a minimum. When proper food is not provided, growth loss over a long period of time can be severe, relatively permanent, and apparently fixed as part of the syndrome from which the child suffers. The correction of the growth pattern requires the combined approach of the entire team attending the child and cannot be made the responsibility of the dietitian alone. Ample room must be provided in our thinking for the roles played by emotional factors in the child and for the role played by those caring for him who unthinkingly often add to his nutritional failure.

The nutritional programs for the mentally retarded are invariably based on the nutritional program for the normal child. This is logical. Nevertheless, there is need for research into nutrition as applied to the mental defective *per se*. It has been a neglected field. Well staffed, well managed, and well equipped institutions for mental defectives could and should serve as research sites, inasmuch as the patient population usually remains in residence for longer periods of time and the details of the daily life and happenings can be accurately recorded. From the work of Mack (3) we can gain hope of the use of these institutions, and the work of Salk (4) on poliomyelitis gives indication of the return an institutionalized population of this type may make to the world at large.

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Administrative Problems in a Large Hospital System[1]

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The objectives of the Nutrition Division of the New York State Department of Mental Hygiene are those of any progressive hospital, namely: improved nutritional status of the patient and efficient expenditure of public funds. Our administrative problems may be more complex because there are twenty-seven separate institutions having a total population of approximately 114,000 patients and 28,500 employees.

We feel that these objectives will be attained through greater attention being directed toward:

(a) Better supervision of each institution's food service department;
(b) Controlled standards of food preparation;
(c) Use of a food ration allowance;
(d) In-service training of food personnel;
(e) Sanitary and efficient service of food;
(f) Modernization of kitchen, serving room, and storage facilities.

Due to the medical staff's greater appreciation of the need for professional personnel, we have been able in the last year to attract additional qualified dietitians to work with food service managers in the operation of each institution's food department.

Additional personnel in the central office now make it possible to visit the institutions more frequently bringing advice, encouragement, and suggestions to the local personnel. One staff member with specialized experience in equipment and sanitation is able to help the hospitals' plan for replacement and the wise purchase of new equipment. Another assists institutional personnel with problems of general nutrition, modified diets, food service, and the efficient use of personnel.

Inspection visits made by members of the central office nutrition staff are meant to be constructive as well as realistic. Written reports are sent to the institution directors and business officers confirming the verbal report made at the completion of a visit. Corrective measures then become the responsibility of the institution director.

It is generally recognized that attitudes influence food acceptance, even among normal individuals. Therefore, in our institutions, every effort is made to provide variety in method of preparation of the foods available and to produce flavorful menu items having pleasing aroma and eye appeal. High standards of food preparation have been established through the application of a card file of over two hundred formulas incorporating uniform procedures. In developing these formulas, standardized to yield 100 portions, an effort was made to use natural by-products of the food industry (nonfat dry milk solids, soy flour, wheat germ, and brewer's yeast) which economically improve the nutritive value of the finished product. Special emphasis was placed on the improvement of readily accepted foods.

[1] Presented at the 37th Annual Meeting of The American Dietetic Association in Philadelphia, on October 28, 1954.

The laboratory of the Food Service Training School has been used as an experimental kitchen for the study and development of acceptable standard formulas and food products.

WORK SIMPLIFICATION

Work simplification methods have been employed wherever possible. For instance, pies are made in bun pans and cut in square servings. Biscuit doughs are patted level in bun pans, scored in serving sizes, and then baked; cookie dough is leveled thinly in bun pans and after baking is cut into bars for individual service. Although they differ from the usual pies the patients might have had at home, they welcome the more frequent appearance of pie on the menu since the adoption of this simplified method.

Meat loaf mixture is leveled in deep baking pans, baked, and cut in serving sizes rather than making meat loaves which require extra handling in molding and later in slicing. Ground meat for such formulas is ground the day it is to be prepared.

Every effort is made to save time and equipment as well as to reduce unnecessary advance preparation of food. Even such a simple thing as the cooking of navy beans has gone through a modernization process. By soaking dried beans in hot water (170°F.) for 1 hr., then simmering for ¾ hr., it was possible to reduce not only the handling and equipment but also the preparation time.

RATION ALLOWANCES

After the standard formulas were developed, it was natural that we should think in terms of further improvement of food for the patient. Much interest was exhibited in 1898 when the New York State Department of Mental Hygiene commissioned A. O. Atwater to recommend a satisfactory food ration allowance for institution inmates. This ration, modified from time to time to meet current conditions, served as a maximum limitation rather than as a purchasing guide, and the monies appropriated for food by the Legislature never covered the purchase of the ration, even though an attempt was made to adjust the ration allowance to a more realistic basis within budgetary limitations.

The more expensive foods, such as meat, eggs, milk, green vegetables, and fruits, were estimated and purchased according to a determined number of persons, both patients and employees, to be fed. In actual usage, however, the employees received a larger proportion of these particular foods, resulting in unequal distribution of foods which are important to an adequate dietary for the patient.

In the belief that the distribution of these foods should be controlled, the Nutrition Division felt it was more realistic to recommend the establishment of separate ration allowances for patients and employees. Thus, an employee ration, based on the charges made for their meals, was established.

FOOD CONTROLS

In a state as large as New York, where the planning must cover the food service to over 114,000 patients, the problem of improving the dietary becomes a challenge in correlating nutrition and finance. It is not just a simple matter of deciding that so many pounds of a certain group of foods are needed but rather what distribution within the group will provide the best nutrition. One must remember that an increased expenditure of 1 cent a day per patient results in an added cost of $400,000 a year.

Since there is widespread interest in the development and use of administrative food controls, a review of our steps of development may be of value.

It was first necessary to analyze the population of the institution to determine sex, age, and degree of activity in order to compute the weighted nutritional requirements using the Recommended Dietary Allowances for the "normal" individual. In the institutions for the mentally ill, we found the average population to be 46 per cent male and 54 per cent female while in the institutions for mental defectives, the division was 53 per cent male and 47 per cent female. To the weighted average of nutrient requirements, 15 per cent was added to cover waste and the reasonable losses in mass production and service.

With these calculations as a measuring stick, we were ready to appraise the nutritional adequacy of the total weights of foods selected and consumed by the total population. The consumption records of eight representative state hospitals and two state schools were analyzed and compared with the above standards—estimates being made for the approximate amount of food diverted to employee and staff consumption.

Separate ration allowances were then developed for employees and patients conforming to the characteristic basic food pattern but modified to improve the distribution and nutritive value of the dietaries. A cost analysis of these ration allowances provided a cost-of-living index on which our food budget estimate was based.

Armed with this material, we could then demonstrate the merits of a change in our operational procedures and to justify a request for necessary financial support. After winning the approval of the central office and the medical and business administrative staffs, conferences were arranged with the Division of the Budget. The inherent hesitancy of a fiscal group to accept a departure from former methods was overcome, and we were ready to develop techniques to aid in working out a satisfactory dietary based on the rations plus the calculation of requirements which were to form the basis of the semiannual food estimate.

Integrating the standard formulas and the food ration allowances required modification of some formulas. Originally we were interested in develop-

ing formulas to improve the dietary, but when plans were evolved to apply a food ration, it became evident that a more flexible food plan could be constructed if the meat formulas fell into a pattern of whole, three-fourths, one-half, or one-fourth meat rations. The responsibility for revising the formulas was turned over to the staff at the Food Service Training School. The revisions were made and incorporated in the material prepared for presentation to the institution personnel.

DEVELOPING THE FOOD PLAN

To estimate the food requirements within food groups, the equivalent of a skeletal menu was constructed. A ration requirement form was used as a guide in developing information required for computing the institution's need. This form charted:

(a) Portions required per service expressed in decimal fractions of a pound.

(b) Number of times per period the food item was to be served.

(c) Semi-annual ration index which was calculated by multiplying portions required by times served per period. This yields the quantity of each food item to be purchased per person for the period.

(d) Conversion factors to be applied to the ration index to reduce to a common standard.

(e) Equivalent semi-annual ration, calculated by multiplying semi-annual ration by conversion factor. This represented the equivalent ration per person per estimate required by the dietary plan.

(f) Pounds of food to be purchased, determined by multiplying the semi-annual ration index (b) by number to be fed.

The total purchases for each food group were to be balanced in such a way that they were within the food group allowance. The use of foods within the rations were to be planned so that each meal would be covered for the period. This ration requirement form was known as the "food plan" and accompanied the six-month estimate for food. It limited the quantity of each food group used, specified the variety to be used within food groups, and indicated the approximate times the food was to be served.

With this accomplished, we could then introduce the food control system to the institution personnel. At one of our general meetings for business officers, food service managers, and supervising dietitians, the new system was explained. They were taught how the plan could be used for budgeting, dietary planning, estimating, purchasing, farm production, food preparation, and finally cost and nutritional accounting. Each member was given a portion of a food plan to develop. This general meeting was followed by regional ones to assist the individual institutions in constructing their first food plans.

Each institution group was encouraged to study the allowances and collect information to support any changes thought to be necessary in the food rations. At a workshop conference, these changes were discussed and evaluated in terms of nutrition and cost. Where improvement was indicated and possible without an increase of cost, the change was made immediately. Modifications requiring increased appropriations were incorporated in the food budget request for the new fiscal year. However, many of the increased costs of the improved rations were offset by changes in purchasing practices.

TRAINING

The in-service training program, reported in the May 1954 issue of the JOURNAL (1) was approved by the Department of Mental Hygiene six years ago. Under the competent direction of a third staff member—with a background of experience in mass food production and the problems encountered in mental hospitals—who is assisted by a full-time instructor and two part-time cook instructors, the course is proving to be an effective means of improving food preparation and service.

During the in-service training program, the student is taught improved methods of operation. He is shown how such methods operate and why they have become the approved procedures. In the laboratory, he becomes familiar with the methods, and as a member of the cooking crew in one of the two training kitchens, he actually applies these improved details of kitchen operation. Back in class at the end of each day's assignment, free group discussion is invited.

Semi-annual workshop conferences, along with the extensive in-service training program of the department, have assisted in the development and promotion of our aims and objectives.

ATTENTION TO PROPER SERVICE

All this concern about quality and preparation of food is of little value if attention is not also directed to its proper service. Much of the training at the Food Service Training School deals with the care and handling of food; the value of well prepared, palatable, attractive food, and its proper service to the patient. The cook is told that his responsibility must extend beyond the preparation of food. Since he calculates the quantity of food to be prepared, he knows the anticipated size of servings, the utensils to be used in serving, and whether there are accompanying sauces or gravies. This information must be passed along to those who will actually do the serving. A good head cook visits his serving counters to see that his products are well served and acceptable to the patients.

In our institutions the supervising dietitian is responsible for the service of food. To this end she conducts the in-service training of dining room attendants, and lectures to the ward attendants on proper food service. Emphasis is placed on neat personal appearance of those serving food, the use of

standard portions, proper serving equipment, neatness and attractiveness of the plate or tray served to the patient, and efficient planning for service. The value of humane consideration and personal attention is stressed. Proper dishwashing and sanitation are integral parts of this training program.

No one institution has the same type of food service throughout, although the present-day trend is toward a modified cafeteria service. Some institutions have consolidated food preparation in a central kitchen, and service in a central dining room. Where this has been possible, diverse serving problems have been simplified. In other institutions, food is prepared in the central kitchen and sent by cart to the various cottage dining rooms.

In large central cafeterias where many patients were formerly brought at one time, we have tried to reduce the number in the dining room at one time by staggering the meal hours for the different wards.

NEW FACILITIES AND MODERNIZING PROGRAMS

In new facilities now under construction, a large central kitchen is planned with dining rooms on each floor. Food carts will be provided for each ward. They will be brought into the serving room and placed at right angles to the serving counter for dining room service. After the meal has been served to the ambulatory patients, the cart accompanied by a dish truck will be wheeled into the ward, forming a mobile cafeteria counter for bedside service. In this way food will be served when the patient is able to eat or when there is someone available to spoon-feed him.

Food service facilities are constantly being improved through new construction and modernization. An extensive postwar building program is expected to be continued. In the current year, in addition to extensive rehabilitation projects, approval has been given by the Budget Director for the purchase of approximately $275,000 in replacement equipment and $70,000 for additional equipment.

An equipment survey is made each year by a representative of the Nutrition Division. The survey indicates whether repairs to existing equipment are feasible or replacement is required, as well as additional equipment needed to improve storage, preparation, or service of food.

The yearly budget request, submitted by each institution, presents needs for all types of equipment. This is reviewed in the central office before the Departments' formal request is made to the state Budget Director and the legislature. To assure that the most urgent needs are met, a system of priority ratings is used when presenting the budget request.

RESULTS IN SATISFACTIONS

We have found a fine sense of accomplishment within the organization when the supervising dietitian and food service manager are good supervisors and know what is happening in all of their units. The welfare of the patient becomes the objective of the job and there is a unity of purpose.

Controlled standards of food preparation and the food ration allowance assure the desired quality and kind of food. All food service personnel prefer to be associated with an acceptable product—which is the natural result of standard formulas prepared under standard procedures.

The in-service training program has not only modernized methods and improved techniques but also developed pride in a job well done and a sense of responsibility in the trainees. The success of an operation depends on such employees.

As greater amounts of suitable equipment are provided for food preparation and service, we can expect to produce greater variety in the meals served. As we modernize and make working conditions better, we can anticipate less difficulty in recruiting applicants for these positions.

There is a challenge in these jobs. Where else can a dietitian use her technical skills to such an advantage? As an administrator of the food department of one of these institutions, she directs the food service of an area the size of a village. She becomes an integral part of a dynamic compaign, personally contributing to the well-being of thousands.

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A.D.A. and American Psychiatric Association Cooperate[1]

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For several years, The American Dietetic Association has had representation on a joint committee with the American Psychiatric Association. This committee has cooperated in setting up standards for dietary departments for mental hospitals throughout the country.

Last year the Mental Hospital Division of the A.P.A. requested that we form a new joint committee to work with them. The A.D.A. was happy to comply, and four dietitians from the Washington, D. C. area were appointed to this new committee, so that they would be available when needed for

[1] Presented at the 37th Annual Meeting of The American Dietetic Association in Philadelphia, on October 28, 1954.

How *Instant* PET Nonfat Dry Milk makes "BEST Brownies EVER!"

Everyone likes Brownies . . . everyone who's tasted Brownies made this brand-new way agrees that they're the *best ever!* And, what's more, they're best in more than one way . . . when they are made with the new miracle milk product, *Instant* PET Nonfat Dry Milk.

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Make them with *Instant* PET and see how delicious your Brownies can be!

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BROWNIES

1. Mix with an electric mixer at lowest speed . . 14 oz. sifted, all-purpose Flour
   3 lbs. Sugar
   2½ teasp. Salt
   10 oz. Cocoa
   ½ lb. *Instant* PET Nonfat Dry Milk
2. Add all at once . . 1¼ lbs. soft Shortening
   1 lb. Eggs
   1 cup Water
   2 tablesp. Vanilla
3. Mix until well blended, then beat at medium speed for 1 minute.
4. At low speed, fold in . . . . ¾ lb. broken, unsalted Nuts
5. Spread batter in a greased 18 x 26 in. sheet cake pan. Bake in 350 oven (moderate) for 35 min., or until cake pulls from sides of pan.
6. Cool in pan 30 minutes. Cut into 9 dozen 2-inch squares.

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meetings at the A.P.A. office, which is in Washington.[2] It was intended that A.P.A. representatives of the original Joint Committee continue to serve as a clearing house for the activities undertaken by the new committee.

The first meeting of the new Mental Hospital Service Working Committee was held at the A.P.A. offices in January 1954. All members were present.

The Committee went on record with the statement that patients in any mental hospital are entitled to good food, no matter what previous standards have been. Everybody in the institution must be vitally interested in food problems, if this goal is to be attained. In pursuit of this aim, the following recommendations were formulated:

(1) Each hospital should have a fully organized and unified dietary department, headed by a professionally trained administrative dietitian who has the full cooperation of the medical and business departments.

(2) Food preparation and service facilities must be adequate.

(3) There must be sufficient well-trained employees selected by the head of the department. They should be trained not only in good dietary practices but also in dealing with mental patients.

(4) A basic ration allowance should be established, which meets for the present, at least the standards established by competent authorities. Under the present "per patient, per diem cost" system, nutrition goes down when price goes up.

(5) All foods should be purchased according to standard specifications, which should be maintained by qualified inspectors and laboratories.

(6) Carefully planned menus should meet nutritional and psychologic needs.

(7) Consideration should be given to inclusion of a variety of foods and regional preferences in order to add to the pleasure of meals and eliminate waste.

(8) All foods must be carefully prepared under sanitary conditions. Correct processing and cooking methods must be followed under proper supervision.

(9) Food must be served as soon as possible after cooking.

(10) Each meal should be a pleasant experience to which the patient can look forward. The importance of attractive service in pleasant surroundings cannot be over-emphasized.

At a second meeting, Alston Gutterson, A.P.A. Architect, presented the needs of an architect in designing new hospitals. He emphasized the importance of well planned food service facilities developed with the assistance and approval of the responsible professional organization. Discussion resulted in a decision that certain standards needed to be developed, such as bed capacity of hospital, number and size of dining rooms, type of service desired according to classification of patients, and extent of short-order cooking.

It was the general opinion of the group that requirements would be planned around a 1500-bed mental hospital divided into three main patient areas.

(a) Receiving and intensive treatment.

(b) Continued treatment.

(c) Geriatrics.

Each of these three groups should be an individual community connected by facilities and areas which meet the common requirements of each.

RECOMMENDED FOOD SERVICE

The following criteria were generally agreed upon:

(a) Main kitchen and preparation area with decentralized food service.

(b) Small dining rooms. If dining rooms are large, they should be broken up with low partitions or other decorative means.

(c) Cafeteria service for the well behaved (chronic) patients.

(d) Serving lines in all cafeterias so planned that a selective menu can be used.

(e) Complete facilities for short-order cooking in each ward serving unit.

Employees should be responsible for the work in the kitchens and dining rooms, and patients should be assigned only the work as part of their therapy.

The Committee members felt that it would be helpful if Mr. Gutterson would supply an outline and questionnaire, based on the 1500-bed hospital which would detail all the information he required. The outline would be subject to revision or alteration. This outline has been prepared by Mr. Gutterson for review and study.

Speaking on behalf of the A.D.A. members of this committee, we have thoroughly enjoyed working with representatives of The American Psychiatric Association and are all looking forward to interesting work in the future.

[2] Members of the Joint Committee are: Chairman, Dr. John L. Smalldon, Director, Architectural Project, A.P.A.; Co-Chairman, Clarice D. Gullickson for A.D.A., Dietetic Specialist in Administration, Department of Medicine and Surgery, Veterans Administration, Washington, D. C.: Dr. Ralph M. Chambers, Central Inspection Board, A.P.A.; Dr. Lucy Ozarin, Chief, Hospital Psychiatry, Department of Medicine and Surgery, Veterans Administration, Washington, D. C.; Dr. Theodore L. Dehne, Superintendent, Friends Hospital, Philadelphia; Frances Gibson, Head Dietitian, Spring Grove State Hospital, Catonsville, Maryland; Una Powell, Food Service Supervisor, Virginia Department of Mental Hygiene and Hospitals, Richmond; Doris Sutton, Chief Dietitian, St. Elizabeth's Hospital, Washington, D. C.

Plan now to attend the 38th Annual Meeting of The American Dietetic Association, October 18–21, 1955, in St. Louis. For news of the advanced planning being done in preparation for this Meeting, see page 530.

Largest-Selling Brand of Coffee in the Institutional Field!

Current Literature

Contributed by Mildred Bonnell and administrative dietetic interns, University of Washington, Seattle; Janette C. Carlsen and Ethel M. Miller, The Johns Hopkins Hospital, Baltimore; Marjorie Cheney, Dietetic Intern, Va Center, Los Angeles; and Elizabeth H. Tuft, Wesley Memorial Hospital, Chicago

THE AMERICAN JOURNAL OF CLINICAL NUTRITION

Vol. 2, November-December, 1954

* Treatment of obesity with a low protein, calorically unrestricted diet. V. P. Dole, I. L. Schwartz, J. H. Thaysen, N. A. Thorn, and L. Silver.—p. 381.
* Nutritional value of beer with reference to the low salt diet. E. G. Olmstead, J. E. Cassidy, and F. D. Murphy.—p. 392.
* Nitrogen balance as related to caloric and protein intake in active young men. D. H. Calloway and H. Spector.—p. 405.

Vol. 3, January-February, 1955

* The importance of nutritional factors in the pathogenesis of iron deficiency anemia. C. V. Moore.—p. 3.
* Some metabolic interrelationships of folic acid, vitamin B_{12}, and ascorbic acid. J. N. Williams, Jr.—p. 20.

Interrelationship of folic acid, vitamin B_{12}, and ascorbic acid in patients with megaloblastic anemia. J. F. Mueller and J. J. Will.—p. 30.

* Essential nutrients in the management of hematopoietic disorders of human beings: a resumé. R. W. Vilter.—p. 72.

Dietotherapy infant nutrition. L. F. Hill.—p. 75.

Low-Protein, Calorically Unrestricted Diet for Obesity. Of 42 overweight patients on a low-protein, calorically unrestricted diet, 32 lost 100 gm. or more per day and continued to feel well. However, after they were discharged, a majority returned to their previous ways of eating. At follow-up examinations three to twelve months after discharge, 52 per cent had regained all of their original weight, 30 per cent had remained nearly steady, and 18 per cent had continued to reduce without supervision. The results indicate that limiting protein to 35 ±5 gm. per day actually had reduced appetite. The routine of treatment (scheduling of meals, restriction of choice of food, regulation of activities) also contributed significantly to the control of appetite. Regular medical supervision is essential if protein limitation is to be a useful adjunct in treating obesity.

Beer in a Low-Sodium Diet. Analysis of twenty-five representative samples of beer reveals an average sodium content of 7 mg. per 100 gm. Public drinking water containing less than 10 mg. per 100 cc. is generally acceptable for low-sodium diets. Study of the urinary sodium excretion in four patients with no evidence of cardiac or renal disease indicated more accurate salt restriction on a diet in which beer provided one-fourth of the day's calories and three-fourths of the fluid intake than when fluid was provided entirely by other sources.

Nitrogen Balance Related to Caloric and Protein Intake. When no protein is fed to young, essentially normal active men, the protein deficit (negative nitrogen balance) can be maximally reduced by supplying about 700 nonprotein calories. No significant protein-sparing is achieved by intake as high as 2800 calories in the absence of protein. When the caloric intake is approximately 1000, 3 gm. nitrogen will result in as great protein sparing as higher quantities of nitrogen. When full caloric requirement is met, 8.5 gm. nitrogen promotes balance and little additional storage results even from much larger protein intakes. These findings suggest that a versatile food unit of 500 calories (7 to 8 per cent of which are derived from protein) would be most practical in the development of a military survival ration, or a short-term civilian emergency feeding.

Nutritional Factors in Iron-Deficiency Anemia. Healthy persons probably maintain a positive iron balance by a narrower margin than was formerly believed, these experiments show. Nutritional factors, therefore, are of major importance in the production or prevention of iron-deficiency anemia. Approximately 5 to 10 per cent food iron seems to be assimilated by normal adults; the amount of iron lost from the body each day, in all ways except as blood, seems to be between 0.5 and 1 mg. The added requirements of children and young women to compensate for growth needs and menstrual flow place them in a precarious state of iron balance, so that poor diet or poor absorption can lead to the production of hypochromic anemia. In adult men and postmenopausal women, nutrition appears to be of less importance. If purely nutritional iron deficiency occurs in these people, many years would be required for its production.

Relationships of Folic Acid, Vitamin B_{12}, and Ascorbic Acid. The precise relationship between folic acid and vitamin B_{12} remains to be determined. There are many blank spots in the picture explaining why these two vitamins sometimes apparently overlap at many points in their metabolic functions. Many of the reactions they apparently catalyze are based on evidence that must be listed as indirect and circumstantial. Mention is made of several studies on these vitamins and their relationship to thymine and thymidine; purines; glycine and serine; methionine, choline, and betaine; histidine; tryptophan; and protoporphyrin.

Essential Nutrients in Management of Hematopoietic Disorders. The author briefly describes the mechanisms of blood formation known at this time. He stresses that each of the nutrients mentioned will usually do one job only, and in order to discover that job, an accurate diagnosis must be made by the physician.

AMERICAN JOURNAL OF DIGESTIVE DISEASES

Vol. 22, February, 1955

* Pyruvic acid metabolism in obesity. A. W. Pennington.—p. 33

Pyruvic Acid Metabolism in Obesity. Controlled experiments on the relative efficiency of carbohydrate, fat, and protein in reducing diets indicate that obese people lose more weight when most of the calories are derived from fat. These findings are explained by a concept of obesity as due to an impairment in the oxidative pathway of pyruvic acid. Recent advances in the biochemistry of pyruvic acid are reviewed and an attempt is made to identify the precise point at which the metabolic defect occurs. The recommended diet is a calorically unrestricted one, very low in carbohydrate, high in fat, and moderate in protein. Neither fat nor protein is restricted. Many diets for obesity have restricted carbohydrate. A high-protein diet, however, has so many proved merits aside from the question of weight reduction that protein restriction would seem inadvisable; protein may help weight reduction in the long run by its effect in gradually increasing the basal metabolism. Many obese people have reduced their weight simply by avoiding the more concentrated carbohydrate foods. From their view point they have merely been "restricting calories," but they have, nevertheless, been limiting the amount of pyruvic acid formed in their tissues. Such patients, however, are likely to become hungry if they do not increase their fat intake. Only 10 per cent of fat (the glycerol fraction) is metabolized by way of pyruvic acid, and this would seem to make fat the source of energy for obese people. Provided carbohydrate is restricted sufficiently, there does not seem to be any need to restrict fat at all.

THE AMERICAN JOURNAL OF NURSING

Vol. 55, March, 1955

* Can drugs reduce weight? M. Millman.—p. 308.
* Diet therapy experience for students. K. Chalender, E. Eskens, J. McNutt, M. H. Esson, and G. N. Wheeler.—p. 317.

Can Drugs Reduce Weight? Many of the "reducing" drugs have been proved scientifically unsound and in many cases incapable of causing the loss of 1 oz. fat. The use of such drugs for reducing began with the use of thyroid extract in 1894. Since then, such use has been found to be not only unsound, but also potentially dangerous. Actually, the ideal reducing drug has yet to be discovered, for there is no known drug which will directly

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cause weight loss. The amphetamines, if used properly, will curb the appetite, but not all authorities agree on their usefulness, for often after the drug is discontinued, the lost weight is regained. The indiscriminate use of these drugs should be discouraged by physicians, nurses, and those concerned with the problem of overweight.

Diet Therapy for Student Nurses. A symposium is presented to show how diet therapy experience for student nurses has been integrated into the total curricula in four schools of nursing. In each school, emphasis is now placed on the role of nutrition and diet therapy in the treatment of the whole patient. Diet therapy is no longer considered an isolated subject unrelated to other phases of the student's learning.

AMERICAN JOURNAL OF PHYSIOLOGY

Vol. 180 January, 1955

* Role of fat and fatty acid in absorption of dietary cholesterol. L. Swell, D. F. Flick, H. Field, Jr., and C. R. Treadwell.—p. 124.
* Absorption of dietary cholesterol esters. L. Swell, T. A. Boiter, H. Field, Jr., and C. R. Treadwell. —p. 129.

Fat and Cholesterol Absorption. Cholesterol-free diets containing soybean oil hydrogenated to varying degrees were fed to rats. It was found that the blood cholesterol level varied with the iodine number of the fat and that the highest degree of unsaturation produced the highest blood cholesterol level. Free fatty acids were more effective in raising the blood cholesterol level than neutral fats. The differences observed between the various fats and fatty acids may be related to the *in vitro* observations which showed that cholesterol is esterified more rapidly with fatty acids than with neutral fat in the pancreatic cholesterol esterase system. It was also observed that fat need not be present in the diet for the absorption of dietary cholesterol, provided a sufficient amount of bile salts are present; the fatty acid needed for esterification can come from endogenous sources. It is suggested that dietary fat serves a dual purpose: (a) it stimulates the flow of bile needed for cholesterol esterase activity and (b) it provides the fatty acid necessary for cholesterol esterification.

Absorption of Dietary Cholesterol Esters. Rats were fed synthetic high-fat diets containing either 2 per cent cholesterol, cholesterol butyrate, cholesterol oleate, or cholesterol linoleate both with and without bile salts. Rats fed cholesterol and cholesterol butyrate had a greater increase of their blood cholesterol levels than those fed cholesterol oleate or linoleate. The elevation of the blood cholesterol was greater when sodium taurocholate was included in the diet. The observed differences in the elevations of the blood cholesterol in rats fed free cholesterol and the esters may be related to the *in vitro* observations which showed that cholesterol butyrate is split rapidly, while cholesterol oleate and linoleate are split at a slower rate. The data presented suggest that cholesterol must be in the free form before it can be absorbed.

AMERICAN JOURNAL OF PUBLIC HEALTH

Vol. 45, February, 1955

* A survey of school lunch practices. C. C. Wilson and E. W. Mood.—p. 163.

Vol. 45, March, 1955

* Nutritional needs of institutionalized patients. J. M. Hundley.—p. 328.
* The program of the National Council on Food Protection. H. F. Vaughan.—p. 342.

Survey of School Lunch Practices. School lunch programs today constitute a major fraction of the public feeding load. It is estimated that one out of every eight meals eaten in public on a school day is eaten in a school. One out of every three children enrolled in schools in the U. S. eats his noon meal at school. Unfortunate incidents resulting from insanitary practices of food service have been reported. These include numerous disease outbreaks during 1953 attributed to contaminated food or drink served in school lunchrooms. Heading this list of episodes was a typhoid outbreak, due to a previously unknown carrier who was employed in food service, and a Salmonella outbreak caused by left-over food being contaminated during storage by rat and mice droppings. There were also several cases of shigellosis and numerous cases of staphylococcal food poisoning resulting from poor food handling techniques, infected fingers, and lack of refrigeration. Also, there was reported an episode of chemical food poisoning attributed to overnight storage of grape punch in a galvanized container. A sample of 795 schools were sent a questionnaire concerning the practices of sanitation. In general, the physical environment in which food was stored, prepared, served, and eaten conformed to accepted standards and practices. Ninety-four per cent stated that there was adequate supply of running hot water. An installed dishwasher was found in 46 per cent, and 19 per cent reported the installation of three-compartment sinks for dishwashing, but 31 per cent used only one- or two-compartment sinks or dishpans. There should be periodic sanitary inspection of school lunchrooms and periodic review of the way school lunches are used for educational purposes.

Nutritional Needs of Institutionalized Patients. Nutritional standards provide hospitals with a yardstick with which to measure adequacy of foods, serve as a baseline for the management and control of food and for the preparation and review of budgetary requests, and are particularly useful when a number of hospitals are supervised from a central point. However, because of the variation of nutritional needs in different types of institutions, standards should be sufficiently flexible to account for local circumstances. Modifications of the Recommended Dietary Allowances for healthy, physically active persons were used as the basis for the nutritional standards in all of the hospitals in the study reported. The hospital diets were higher in protein, vitamins, and minerals than the recommendations. Some modification in favor of protein and ascorbic acid content was made to account for trauma, surgery, and other hospital factors.

National Council on Food Protection. The food protection program of the National Food and Beverage Council is discussed. The Council's activities include developing of voluntary and coordinated leadership among health authorities, industrial representatives, other groups, and individual citizens; developing educational material and instructional aids to be used at all educational levels; and establishing pilot programs in representative communities and working out details of activating community-wide educational programs with state and local leadership. It is suggested that a guide or manual be issued which would combine the best features of existing food and beverage service regulations and provide a uniform sanitation code for communities and industry to follow.

CANADIAN MEDICAL ASSOCIATION JOURNAL

Vol. 72, February 15, 1955

* Vitamin B_{12} and the growth of children: a review. J. A. Campbell and J. M. McLaughlan.—p. 259.

Vitamin B_{12} and Growth in Children. Nine reports on the oral administration of vitamin B_{12} to normal and underweight children and several reports on its use for chronically ill children have been reviewed. The reports are conflicting and demonstrate, above all, a need for critically controlled experiments before any definite conclusions can be reached regarding the possible effect of vitamin B_{12} on growth in children. To date, available evidence indicates that the effect is far from spectacular and that there is little, if any, justification for the widespread use of vitamin B_{12}.

ANNALS OF INTERNAL MEDICINE

Vol. 42, January, 1955

* Gout—now amenable to control. E. C. Bartels.—p. 1.

Gastroscopy: a 14 year survey of over 1,100 consecutive examinations. J. C. Meadows and E. J. Lefeber.—p. 69.

* The familial occurrence of hypertension and coronary artery disease, with observations concerning obesity and diabetes. C. B. Thomas and B. H. Cohen.—p. 90.
* Hodgkin's disease: an analysis of frequency, distribution and mortality at the University of California Hospital, 1914–1951. M. B. Shimkin, K. C. Oppermann, W. L. Bostick, and B. V. A. Low-Beer.—p. 136.

Vol. 42, February, 1955

Patterns of protein excretion by the kidneys. S. E. King.—p. 296.

* The management of refractory edema in heart failure. A. L. Rubin, H. G. Thompson, Jr., W. S. Braveman, and E. H. Luckey.—p. 358.

Control of Gout. Gout has for many years defied effective and sustained control. Because of the hyperuricemia, attempts to control gout by a low-purine, low-fat diet are usually made, but dietary restrictions alone are in most cases inadequate. Benemid is a drug which is

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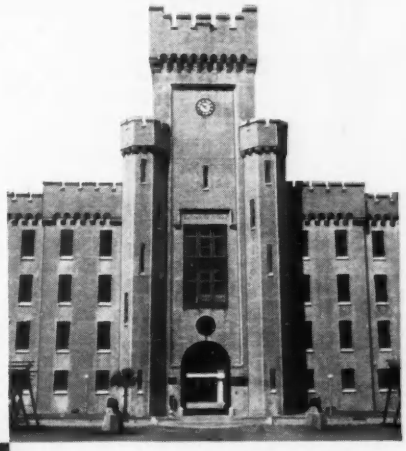

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now being used to control this disease. It exerts a specific action on the renal tubules, which results in reduction in the tubular resorption of urates, thereby increasing their urinary excretion and a consequent decrease in the level of the serum uric acid. It is hoped that this process will lead to a slow but steady depletion of the topaceous stores of uric acid present in gouty patients, causing disturbed joint function.

Hodgkin's Disease. From 1920 to 1950 there has been a progressive, consistent shift in the sex ratio of patients with Hodgkin's disease with an increasingly higher proportion of females, and also a shift toward a higher age at onset or at death. The duration of illness has showed no significant change. The mean survival of the total 254 patients was 44.3 months; five-year survival was 26.5 per cent. Three patients have remained clinically free of disease for nine to twelve years after treatment.

Familial Occurrence of Hypertension and Coronary Artery Disease. The prevalence of hypertension, coronary heart disease, obesity, and diabetes among the parents, grandparents, aunts, and uncles of 266 medical students is reported. It was found that combinations of two or more disorders affecting the same individual occurred more frequently among both parents and grandparents than might be expected by chance alone. The degrees of association were particularly high between hypertension and coronary heart disease and between hypertension and obesity. Comparison of the incidence of other disorders in affected and in nonaffected parents or grandparents again showed significant differences, pointing to the fact that hypertensive persons have more coronary heart disease and more obesity than normotensive persons. A study of the incidence of the four disorders in siblings showed that: (a) hypertension was three times as frequent among siblings of hypertensive individuals as among normotensive individuals; (b) coronary heart disease was nearly four times as prevalent among siblings of individuals with coronary artery disease as among siblings of persons without it; (c) the siblings of obese persons had four times as much obesity as the siblings of non-obese persons; and (d) diabetes was eight times as common among siblings of diabetic persons as among the siblings of non-diabetic persons.

Management of Edema in Heart Failure. Most patients with refractory edema do not have electrolyte imbalance prior to rigorous treatment. In this study, in nine episodes of refractory edema due to congestive heart failure, restoration of responsiveness to mercurial diuretics was accomplished by the production of hyperchloremic acidosis. No untoward effects of either the hyperchloremia or acidosis were observed.

BRITISH MEDICAL JOURNAL

No. 4910, February 12, 1955

* Iron deficiency in pregnancy. M. Fisher and R. Biggs.—p. 385.

Iron Deficiency in Pregnancy. It is customary to give iron to pregnant women who are "really" anemic, the critical level at which treatment is considered necessary varying from one center to another. When facilities for hemoglobin estimations are not readily available, the presence or absence of "anemia" is sometimes judged clinically. This is highly fallacious, as it was proved some years ago by comparing the hemoglobin levels in pregnant women as judged clinically and estimated in the laboratory. Comparisons made on 173 patients netted an error of 10 per cent or more on almost half of subjects. The limits of error were a clinical overestimation of 34 per cent and an underestimation of 46 per cent. In view of the finding in this series of patients, it would seem advisable to prescribe iron for all pregnant women and to see that it is actually taken. The administration of iron in pregnancy insures a high level of hemoglobin at term in about 90 per cent of cases. It is suggested that giving iron as a routine to all pregnant women is a valuable and inexpensive preventive measure worthy of general application. The safety of domicillary midwifery—which is questioned at times—would undoubtedly be increased by this means.

FOOD RESEARCH

Vol. 20, January-February, 1955

* The nutritive value of legume proteins and legume-wheat mixed proteins in Near East diets. W. H. Adolph, E. I. Shammas, and S. H. Halaby.—p. 31.
* Pantothenic acid content of tropical foods. C. F. Asenjo and A. I. Muñiz.—p. 47.
* Distribution of carotenoids in the tomato. J. P. McCollum.—p. 55.
* Newer concepts of the role of fats and of the essential fatty acids in the diet. H. J. Deuel, Jr.—p. 81.

Nutritive Value of Legume Proteins. Protein efficiency ratios measured by the rat growth method on the commonly used legumes, parboiled wheat, and a group of legume and parboiled wheat mixtures used in the Near East are reported. Cooked chick pea alone and the cooked-chick-pea-parboiled-wheat mixture are shown to possess high nutritive value with respect to protein. A chick-pea-broad-bean-parboiled wheat mixture also showed a high protein efficiency. Some degree of supplementary action among the protein constituents is evident for all the mixtures examined. These experiments suggest the important role of mixed food protein sources in areas where the intake is largely restricted to proteins of vegetarian origin.

Pantothenic Acid in Tropical Foods. Pantothenic acid is suspected to be essential for normal nutrition. The pantothenic acid content of 123 different foodstuffs produced or consumed in Puerto Rico and neighboring islands is reported. Analyses were done by the microbiologic assay method.

Carotenoids in the Tomato. The outer pericarp of the tomato was found to be highest in total carotenoids and the locular contents highest in carotene. These two regions of the fruit resulted respectively in the best and poorest color. Exposure to light may alter the normal distribution of carotenoids.

Fats and Essential Fatty Acids in the Diet. Much evidence has accumulated to support the hypothesis that fats are essential rather than optional components of the diet. The author discusses a number of nutritional indices suggesting that fats in general are indispensable. These indices include not only the classical procedures for evaluation, such as growth, pregnancy, and lactation, but also some new ones, such as the time of sexual maturity, the nitrogen-sparing action, work capacity, survival during fasting, and the ability to combat external stresses. In discussing essential fatty acids, he points out that they play an essential role in making possible successful pregnancy and lactation; they have likewise been found to serve as protective agents against X-irradiation and in preventing the development of the permeability of the skin capillaries. It has also recently been recorded that the essential fatty acids are important in assuring the normal distribution of cholesterol in the rat.

JOURNAL OF AGRICULTURAL AND FOOD CHEMISTRY

Vol. 3, March, 1955

* Meat quality, effect of castration on biochemistry and quality of beef. E. Wierbicki, V. R. Cahill, L. E. Kunkle, E. W. Klosterman, and F. E. Deatherage.—p. 244.
* Fruit nutrient content, B vitamin content of California-grown avocados. A. P. Hall, J. G. Moore, and A. F. Morgan.—p. 250

Radiation sterilization, review of status and problems of radiation preservation of foods and pharmaceuticals. S. A. Goldblith and B. E. Proctor. —p. 253.

Potato composition, phosphorus components of white potato. S. Schwimmer, A. Bevenue, and W. J. Weston.—p. 257.

Effect of Castration on Beef Quality. Under comparable feeding management involving good nutrition from birth, bulls are more efficient in converting feed to meat than steers. Bulls produce a higher percentage of edible meat, the difference being due primarily to the waste fat from steers rather than other body characteristics. Carcass grade and tenderness of the meat of bulls were slightly less. Use of diethylstilbestrol on bulls improved the efficiency of meat production still more, and the carcass grades and the consumer quality of the meat approached that for the steers. Muscle plasma proteins greatly affect tenderness and this is even more pronounced when connective tissue is low, as in young, well fed animals. Marbling has no relation to tenderness, except insofar as it may indicate sex, breeding, quality of the ration, and length of feeding period. Color has no relation to tenderness, except that it may reflect some age or sex differences.

B-Vitamin Content of Avocados. No consistent effect upon the moisture, fat, or vitamin content of avocados was found to result from the season, crop year, period in refrigeration, or period of ripening at room temperature for California-grown avocados. In the three varieties studied, the greatest variable

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was the fat content, which was 17 to 20 per cent in the Fuerte and Hass varieties, but only 10 to 12 per cent in the Anaheim. Lower values for thiamine, folic acid, vitamin B_6, and biotin as well as for fat characterize the Anaheims. Lower thiamine but high niacin, folic acid, and pantothenic acid are found in the Hass variety as compared with the Fuerte. All these differences are small, however, in view of the variability from sample to sample.

JOURNAL OF CLINICAL INVESTIGATION

Vol. 34, February, 1955

The effect of phenylbutazone on uric acid metabolism in two normal subjects. J. B. Wyngaarden. —p. 256.

THE JOURNAL OF NUTRITION

Vol. 55, February, 1955

* Ascorbic acid utilization by women. Response of serum level and night urinary excretion to increasing levels of intake. M. Potgieter, E. H. Morse, and G. R. Walker.—p. 217.
* Nutritional status of the aging I. Hemoglobin levels, packed cell volumes and sedimentation rates of 577 normal men and women over 50 years of age. H. L. Gillum, and A. F. Morgan.—p. 265.
* Nutritional status of the aging. II. Blood glucose levels. H. L. Gillum, A. F. Morgan, and R. I. Williams.—p. 289.
* The Vanderbilt Cooperative Study of Maternal and Infant Nutrition. VII. Tocopherol in relation to pregnancy. M. E. Ferguson, E. Bridgforth, M. L. Quaife, M. P. Martin, R. O. Cannon, W. J. McGanity, J. Newbill, and W. J. Darby.—p. 305.
* Methods for measuring fingernail growth rates in nutritional studies. M. J. Babcock.—p. 323.
* The effect of fat level of the diet on general nutrition. XIV. Further studies of the effect of hydrogenated coconut oil on essential fatty acid deficiency in the rat. H. J. Deuel, Jr., R. B. Alfin-Slater, A. F. Wells, G. D. Kryder, and L. Aftergood.—p. 337.

Ascorbic Acid Utilization in Women. Two groups of women were studied regarding their response to various levels of ascorbic acid intake. The experimental subjects, after a two-month period without vitamin supplementation, received 25, 50, and 100 mg. per day, each for one month while on a diet which provided 45 mg. ascorbic acid per day. The control subjects were on the same diet without supplementation. The average serum ascorbic acid level for all subjects fell from 0.97 to 0.42 mg. per 100 ml. during the two months on the restricted intake. The maximum average serum level of 1.49 mg. was reached in the experimental subjects following the month with the 50-mg. daily supplement. The average serum ascorbic acid level of the control group dropped to 0.13 mg. at the end of the five months. Average value for total ascorbic acid in the 8-hr. night urine increased only slightly in the experimental subjects after the 25 mg. and the 50 mg. daily supplementation. Following the month on the 100-mg. daily supplement, it increased to an average of 30 mg. The excretion level of the control group remained at about 2 mg. throughout the study.

Hematology in the Aging. Physical examinations, medical and dietary histories, seven-day dietary records, and blood and urine analyses were carried out on 577 men and women over fifty years of age. All but forty-seven men were living in their own homes. The hemoglobin levels of the men living in their own homes were higher than those of the women. Values declined in both men and women seventy-five years of age or older and the difference became insignificant. The volume of packed cells was likewise larger in men than in women, but sedimentation rates were higher in women than in men and tended to increase with advancing age. Dietary records indicated that the men living in their own homes ate from 15 to 34 per cent more calories and protein and up to 50 per cent more iron per kilogram of body weight than women in the same age groups. A trend toward decrease with age in intake of these nutrients was evident, and hemoglobin level paralleled intake. The men in the county home exhibited hemoglobin concentrations similar to the other men in the study but the volume of packed cells was somewhat lower. It is indicated that there is a possibility that the male sex hormone may influence blood production significantly at least up to seventy-five years of age.

Blood Glucose Levels of the Aging. Of the 577 men and women studied, postprandial blood sugar levels of 430 are reported. The mean venous blood sugar levels, excluding all those above 130 mg. per 100 ml. were determined by a method which recorded the true reducing sugar

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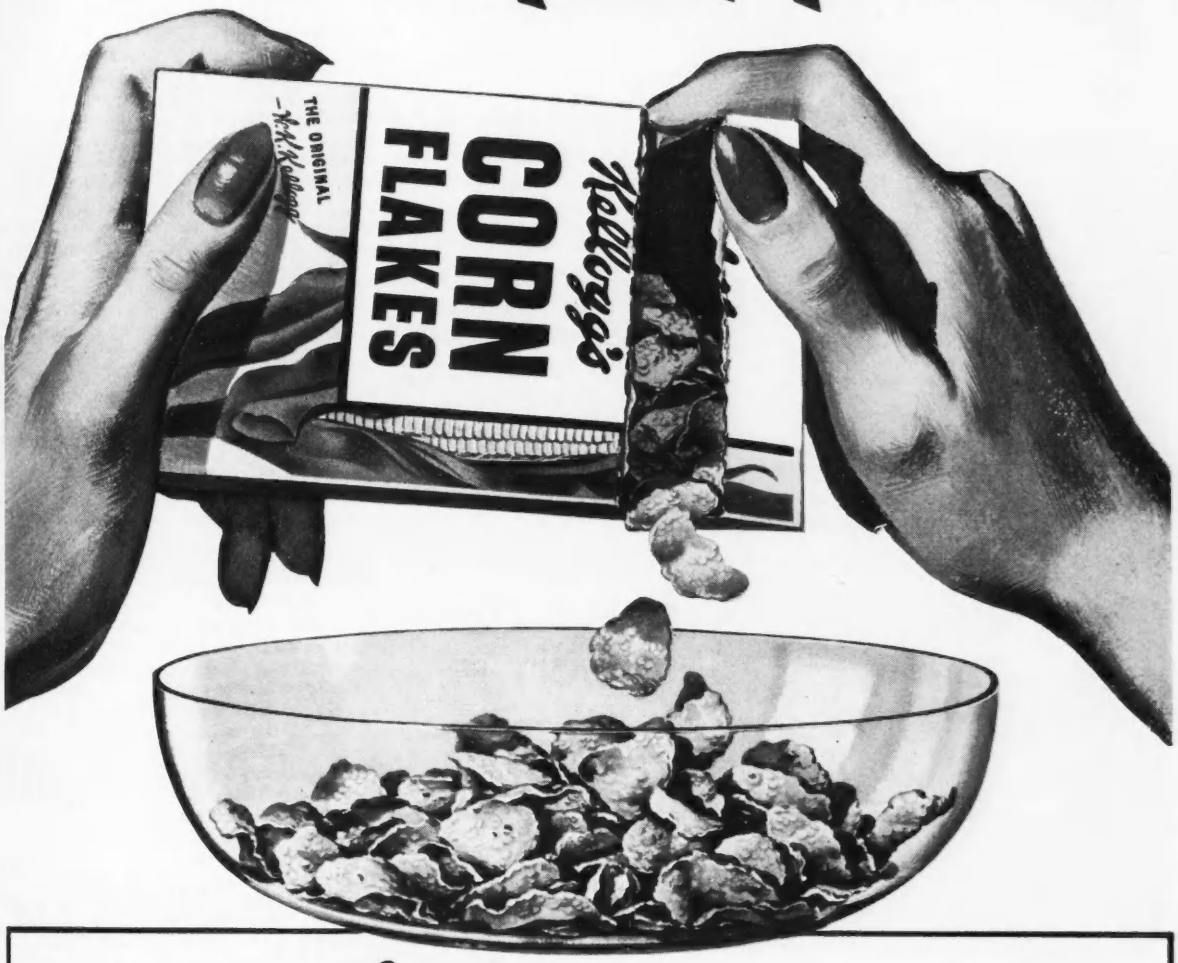

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content. There was little variation with age or sex, although there was a slight indication of an increase with age in the women. The overall mean was 101 mg. per 100 ml. blood. Hyperglycemia was found in 2.1 to 5.6 per cent of men and 1.3 to 4.4 per cent of the women. Glycosuria of varying degrees was noted in thirty-six cases, twenty-four of them 2 hr. or more after the last meal. Men in the county home over sixty-five years of age had significantly lower blood sugar levels than those living in their own homes. A moderate positive correlation between fat intake and blood sugar level was found in the women but not in the men. No correlation of blood sugar with carbohydrate or protein intake was found in either men or women.

Tocopherol in Pregnancy. Variations in plasma tocopherol levels during pregnancy are described based upon 1575 single determinations of tocopherols and a group of serial estimations on 39 women. The calculated dietary intake of total tocopherol for 197 pregnant women ranged from 2.9 to 33.3 mg., with a median approximating 10 mg. The average total tocopherol content of plasma increased from 0.89 ± 0.02 mg. per 100 ml. for measurements during the first trimester of pregnancy to 1.40 ± 0.05 mg. per 100 ml. at thirty-nine weeks or later. Increased concentration of tocopherol in plasma occurred with age and in diabetic patients. Plasma levels of tocopherol tended to be lower in the groups with the lower calculated intakes; the differences were noted at an intake level below 8 mg. total tocopherol daily. It may be concluded that no support has been obtained for the thesis that tocopherol deficiency accounts for the unexplained complications of pregnancy which are encountered in a "normal" obstetrical population.

Fingernail Growth Rate Methods. Evidence in the literature has shown that fingernail formation is probably influenced by the state of nutrition, endocrine factors, disease, and environmental factors. It is suggested that quantitative measurements of fingernail growth response following dietary supplementation might be useful in assessing the nutritional status of individuals. A method for measuring nail growth rates over short-time periods is presented which was found to be capable of detecting differences in growth rates of approximately 5 per cent. The method is based on measuring the distance a scratch-mark on the thumbnail advances with respect to the lunula during one week. Enlarged photographs are used to record the positions of the mark and increase the precision of the measurements. The method gives a permanent, objective measure of anabolic processes without discomfort to the subject.

Dietary Fat and General Nutrition. Adding hydrogenated coconut oil to the otherwise fat-free diet of rats has resulted in the depletion of essential fatty acids in a shorter time and at a lower animal weight than when the rats were fed a fat-free diet alone. However, the continued presence of hydrogenated coconut oil in the diet had no apparent inhibitory effect on the subsequent response of the animal to linoleate, although the animals depleted with hydrogenated coconut oil in the diet had a greater growth potential than those depleted on the fat-free diet. In rats receiving diets deficient in essential fatty acids, there was an increased cholesterol concentration in the liver and a decreased cholesterol content in the plasma after one week. However, although the condition was further aggravated thereafter in the animals on the fat-free diets, cholesterol levels of the rats receiving hydrogenated coconut oil in the diets gradually returned to normal. This effect may have been due to the availability of short-chain fatty acids contained in the hydrogenated fat for esterification of cholesterol.

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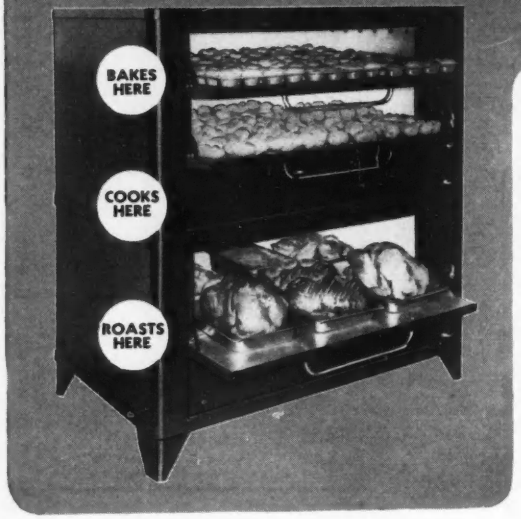

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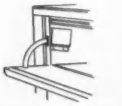
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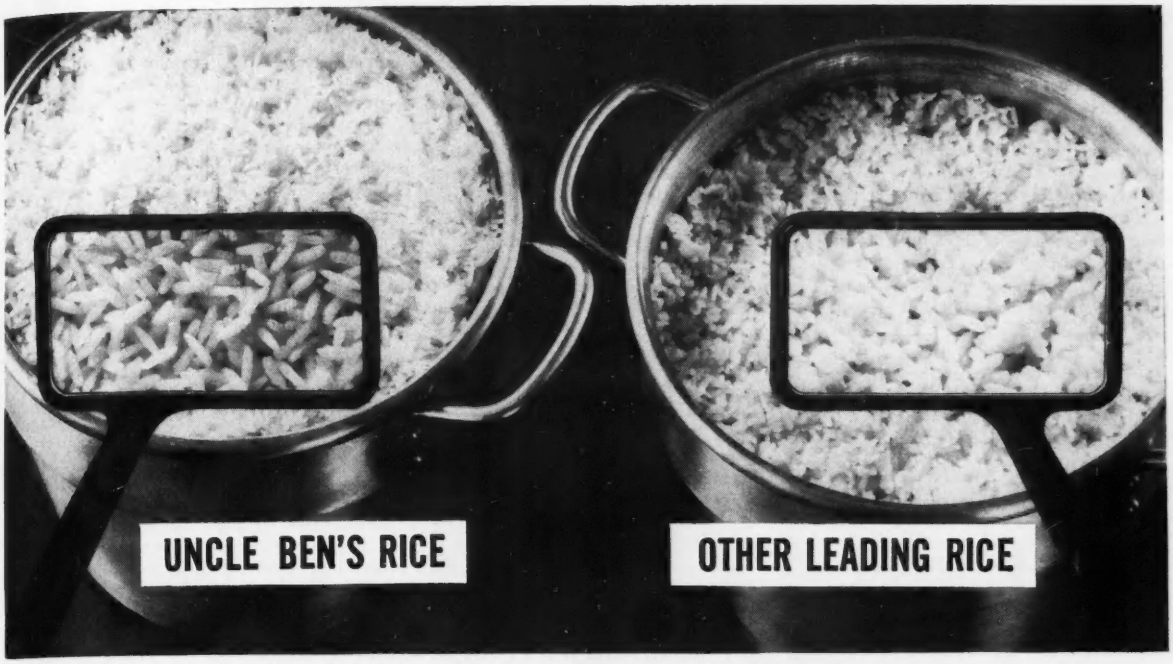
THE JOURNAL OF SCHOOL HEALTH

Vol. 25, February, 1955

* American School Health Association surveys school lunch operation.—p. 35.

Survey of School Lunch Operations. A large amount of data concerning the operation of school lunch programs has been gathered by this survey of the American School Health Association. Most of the data deal with practical issues such as the types of lunches served, dishwashing equipment available, and how health studies are related to the school lunch program.

HERE'S PROOF...



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THE MEDICAL CLINICS OF NORTH AMERICA

Chicago Number, January, 1955

* Selection of therapy in diabetes mellitus. A. R. Colwell.—p. 39.

Therapy in Diabetes. Diabetes mellitus is defined as any state in which glycosuria with hyperglycemia is present persistently without treatment. Most cases have been found to be idiopathic, requiring supportive therapy, namely dietary restriction with or without insulin. Individualized methods of treatment have become necessary as severity increases. Five cases were reported to illustrate the range of methods now used n the routine treatment of diabetes.

NUTRITION REVIEWS

Vol. 13, February, 1955

* Nutrition and stress. B. H. Ershoff.—p. 33.
* Long-term nitrogen balances.—p. 42.

Vol. 13, March, 1955

* Early experiences with fish oils—a retrospect. C. E. Bills —p. 65.
* Kwashiorkor.—p. 67.
* Vitamin deficiencies in patients with diabetic retinopathy.—p. 74.
* Dietary habits of elderly people.—p. 81.

Nutrition and Stress. The author cites highlights of various studies which have been made in this field. He points out that the increased nutritional requirements following exposure to stressor agents result not as a consequence of "stress" *per se* but rather from the increased requirement for specific nutrients due to the physiologic effects of the particular stressor agent involved. Nutritional deficiency may result in the impairment of resistance to various stressor agents. An ideal diet which is optimally effective against all forms of "stress" is not yet known. Diets which may confer marked protection against one type of stressor agent may actually augment the deleterious effects of another.

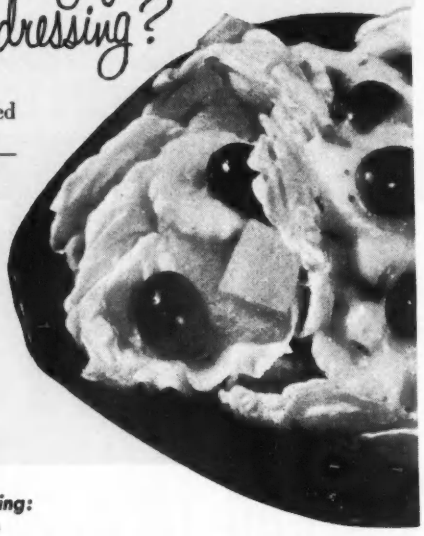
Long-Term Nitrogen Balances. Results of a survey in East Africa are described. The protein-deficient subjects showed a large retention of nitrogen even after having been on a high-protein diet for a number of months. Retention of body tissue corresponded fairly well with gain in body weight. These nitrogen balances raised the question as to how close to equilibrium long-term nitrogen balance studies can come when they are made on normal subjects. Data collected on twenty-three university students indicated an over-all retention of 1 gm. per day. Body weights were reported to have varied little. It is difficult to explain the mechanism of nitrogen retention. Further work should be done to establish the exactness with which nitrogen equilibrium can be attained in long-term studies. Should the retention be as high as has been indicated, both among normal subjects and in debilitated patients, then an attempt should be made to determine the site and significance of the retained nitrogen.

Early Experiences with Fish Oils. The author briefly describes the research on vitamins derived from fish oils. Much study was devoted to the theory that those species of fish which regularly have lean livers may nevertheless be excellent vitamin sources. The percomorphs (tunas, bass, and so on) were found to carry extraordinary amounts of vitamins A and D, even hundreds of times more than the cod.

Kwashiorkor. Although much has been accomplished toward a better clarification and understanding of kwashiorkor, the opportunities for continued investigation are great. Not until the exact cause of kwashiorkor is established is it likely that it can be prevented in areas of high prevalence where potent economic factors or racial custom limit the variability and availability of proteins, including those of animal origin. The article discusses causes, symptoms, and treatment of kwashiorkor. It cites two studies in which opposite points of view are taken regarding a direct relationship between fatty liver and fibrosis of the liver in Africans with malnutrition. Another study cautions that treatment must begin slowly and be gradually intensified. Biochemical alterations which have been noted in patients with kwashiorkor are described.

Vitamin Deficiencies in Diabetic Retinopathy. A recent work implicates the adrenal cortex and members of the B-vitamin family in the pathogenesis of the Kimmelstiel-Wilson syndrome. Clinical evidence indicates that in diabetic patients with retinopathy, the adrenal cortex may exhibit excessive activity.

Like to make a really good low calorie salad dressing?



Start by leaving out calorie-loaded oils. Then—and here's the trick—*use calorie-free* SUCARYL *instead of sugar.* No "bite" or off-taste. Flavor stays, calories come out—and you've got a salad dressing to fit every diet occasion! Abbott

Here's your basic low-caloric dressing:

- 2 teaspoons SUCARYL Solution or 16 SUCARYL tablets, crushed
- 2 eggs beaten
- 2 tablespoons cornstarch
- ½ teaspoon dry mustard
- 1 teaspoon celery seed
- Salt and pepper
- ¼ cup lemon juice.

Add SUCARYL to eggs; mix well. Add cornstarch, dry mustard, celery seed, salt and pepper. Add lemon juice; mix well; add water. Cook over medium heat, stirring constantly, until mixture begins to thicken. Cool. Makes 40 tablespoons, *5 calories each.*

plus these tasty variations:

TOMATO SALAD DRESSING

To one cup above, add one cup tomato juice, 1 teaspoon grated onion, one teaspoon SUCARYL Solution (or 8 tablets, crushed) and one teaspoon cornstarch. Mix well; cook over medium heat, stirring constantly, until mixture thickens. Cool. Makes 32 tablespoons, 5 calories each.

THOUSAND ISLAND DRESSING

To one cup above, add ½ cup each: chopped pimento, chopped olives, chopped dill pickle and chili sauce or ketchup. Chop one hard-cooked egg fine; add to mixture. Makes 32 tablespoons, 10 calories each.

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They also excrete in the urine a much larger percentage of a standard injected dose of vitamin B_{12} than do diabetic patients without retinopathy. Despite their increased excretion of vitamin B_{12}, there is an indication that diabetic patients with retinopathy may have a latent deficiency of vitamin B_{12}. It may be that diabetes acts as a conditioning factor in producing latent pantothenic acid and vitamin B_{12} deficiencies in its victims. It is recommended that much further study be given to this concept in the hope that a way of preventing or arresting diabetic retinopathy may eventually be uncovered.

Dietary Habits of Elderly People. A survey has shown that economics and the condition of the teeth are not necessarily the most important factors in molding the dietary patterns of older people. Medical and social factors were listed more frequently than economic reasons for changes in eating habits. An extensive survey made in England showed that the men ate more bread, cereal, potatoes, root vegetables, cheese, meat, soups, gravies, sugar, and preserves than did the women. The women ate more fruit. In general, individuals who lived alone ate less of the foods that required some preparation than did married couples. Only 77 of the 303 persons studied were classified as medically fit. A dietary survey of men and women living in residential homes showed that they consumed from 400 to 500 calories a day more than the individuals in the preceding group who were either living alone or with another elderly person. It is suggested that part of this may be due to the fact that individuals in homes did not have to prepare their meals.

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ADULT LEADERSHIP

Vol. 3, March, 1955

Improving your teaching. W. J. McKeachie.—p 14.
• The adult learner. P. Siegle.—p. 16.
• Teaching the individual. G. Murphy.—p. 19.
• Permissive or directive?. J. M. O'Hara.—p. 22.

The Adult Learner. The idea that adults cannot be educated has become a part of the mythology of the American system, but is definitely false. Experiments in learning indicate that there are significant differences in kinds of learning ability at different age levels due to factors such as remoteness from school, disuse of functions, decline in physical abilities, or shifts in motivation, all of which, plus other various factors, tend to be detrimental to the adult as compared to the learning ability of youth. However, adults have the added advantage of experience. Experience helps them to change their ways of thinking, feeling, and doing. Educators should, in educating adults, first analyze learning as a whole and then the thing to be learned. Often the adult feels a little out of place in the classroom and gets less guidance than younger students, although he really needs it. An adult is usually a good student because he is eager to learn and knows what he wants to learn, and the educator will help him by adapting educational techniques in an adult class to the adult personalities.

Teaching the Individual. In teaching a group, it must be remembered that the teacher is actually dealing with the individual. Each individual responds differently to things which are taught, which means that the factor of individual emotions is involved. No two people hear, see, or read the same thing with the same emotional impact. Each perceives selectively and makes his own interpretation separately. Perception involves a way of feeling, as well as a way of interpreting. Also involved in learning is the individual conception of his individuality, which is called self-image. It is actually the picture one entertains regarding oneself, one's sense of identity, where one belongs, what one can do, what one's assets and liabilities are. The teacher or planner in education must consider these facts when dealing with individuals: (a) first, all content simultaneously has intellectual, emotional, and impulse facets which create on one hand facts and skills now available to the learner, at the same time supplying new material with a feeling tone which alters the feeling tone of a large variety of other items in the individual's fund of knowledge and skills; (b) second, the material is not simply presented, as in a book or on a blackboard. Whether the teacher wants it or not, the materials will be assimilated to the self and arouse certain acceptances or rejections, creating a sense of pride, satisfaction, and power, or of defeat, humiliation, and

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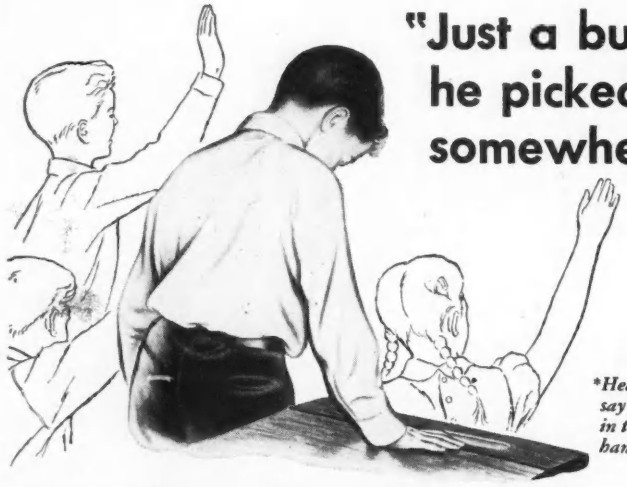
JOHN SEXTON & CO., CHICAGO, 1955

impotence: (c) the individual learns as a member of a group, sharing the goal of learning and interpreting the material presented as something with respect to which he agrees or disagrees with the speaker and/or other members of the group.

Permissive or Directive? A recent study shows that when compatibility in the classroom is high, learning is high; when it is low, learning is low. The author illustrates this by using different types of students and teachers in learning situations. The students are of three different types: the conformist, who believes the teacher is teaching because he knows more than the students and would like the teacher to lecture the whole class-time; the individualist, who likes to talk and likes class discussion; and the combination of these two types who is satisfied in almost any kind of class. The teachers are of three types: Mr. Abdicative, who loves group discussions; Mr. Directive, who likes to lecture and prides himself on his lectures; and Mr. Stimulative, who is a combination of the other two. Mr. Stimulative promotes group discussion with some direction, whereas Mr. Directive believes that class discussion is a waste of time, and Mr. Abdicative believes that lectures are a waste of time since the students must have free self-expression and be able to stand on their own and express their views.



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MADE BY THE MAKERS OF FAMOUS COLT HANDGUNS, INDUSTRIAL PACKAGING EQUIPMENT, AND MOLDED PLASTIC PRODUCTS

AMERICAN RESTAURANT MAGAZINE

Vol. 39, March, 1955

* How to improve your restaurant results. J. E. McNamara.—p. 74.
* What's the matter and what to do about it. C. E. Blackburne.—p. 98.

Improving Restaurant Results. In any restaurant operation, regardless of size, the biggest items of expense are food and labor. If one is way out of line, the restaurant fails to make the profit it should; if both are out of line, there is usually a loss. The restaurant business can actually be compared to a manufacturing plant, for it purchases raw materials from which it produces a finished product. Food production involves highly perishable raw materials, specialized labor, and strict controls for maximum efficiency and profit. In trying to improve restaurant results, food cost control and payroll must both be considered and every aspect of each should be diagramed and thought out carefully.

Check List for Improvement. Even in some of the best regulated kitchens and bake shops, there are times when finished products fall short of the standard set for them. Some of the common causes of such failures are listed, together with suggested remedies. Included are common difficulties found in: cakes, icings or frostings, pies, cookies, doughnuts, and bread. A "check list for the feeding activity" is also presented with sections on: (a) food preparation and display, (b) procurement and control of food and supplies, (c) cost of food control, and (d) expense control.

COOKING FOR PROFIT

Vol. 24, February, 1955

* Formula for better pies. D. Schuler —p. 8.
* Utilization of food. C. Gulley.—p. 18.
* Disaster feeding.—p. 21.
* Wanted . . . dishwashers!—p. 23.

Pie Crusts. This article outlines the principles of successful preparation of pie crust. The characteristics of the ingredients, flour and shortening, and their different effects on the end product are discussed. Methods of preparation for a short mealy crust, flaky crust, short flaky crust, and an extra flaky crust are also presented.

Utilization of Food. Utilization of food means to get the most out of your food materials. Some foods may be purchased in large quantities at a very low cost, and it is up to the food manager to exercise the best judgment in planning menus and different dishes from the same foods to take advantage of the original purchase. To get good use of food, employees must cooperate and understand the importance of left-overs. Vegetables should be cooked in small amounts in relays as needed, never in large quantities. Left-overs may be used in salads, may be creamed or prepared au gratin, or may be used in other dishes. Left-over meats may be used in hot meat sandwiches, in salads during the summer, or in meat salad sandwiches.

Disaster Feeding. To expedite serv-

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Sanitary, individual PREAM Packets eliminate costly filling, washing, storage of creamers. PREAM's easier to store than cream . . . stays fresh indefinitely . . . no danger of spillage or spoilage!

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City_____

ice in any emergency, foresight and advance preparation are essential. Some handicaps with which a restaurant owner may be confronted are as follows: no light, no refrigeration, no telephone communication, no transportation, lack of normal sanitary conditions, contaminated water supply, and excessive demand for food. These problems may be solved by keeping on hand a supply of candles or oil burning lamps and paper containers, a good stock of canned food, supplies of canned milk and dried milk solids and substantial foods such as beans, soups, spaghetti, and rice well above normal.

Wanted . . . Dishwashers! The dishwasher's greatest needs are (a) a good layout and (b) enough hot water all of the time. To take care of the first need, arrange a logical sequence for flow of work, have adequate space for the handling of soiled dishes and have efficient methods for disposing of clean ones. The biggest bottleneck is enough hot water. In automatic dishwashers, dishes should be washed at 140°F. and rinsed not less than 10 seconds in 170°F. water. Hand-washed dishes must be immersed for at least 2 min. in clean, hot water of at least 170°F. or ½ min. in boiling water. Rinse water of 170°F. does away with the need for toweling.

FOOD SERVICE

Vol. 17, February, 1955

* Portion control: only answer to high food costs.—p. 15.
Toast plays a 'come-on' role.—p. 22.
How to pep up lenten sales.—p. 25.
* Food service in hospitals.—p. 41.

Portion Control. In knowing per-portion costs of foods, the operator is able to exercise closer control over purchasing and inventory. Per-portion costs, however, would be of little value in establishing an economy program without accurate measures for individual servings. Reasons for portion control include: (a) It is the only solution to cost control. (b) It helps standardize quality. (c) Customers receive like portions. (d) Lower inventories are possible. (e) It makes meal planning easier. (f) Inventory is more accurate. (g) There is closer control over ordering.

Dishwashing Room. Minimizing noise and generally contributing to pleasant working conditions improves efficiency. To bring about this happy balance in the dishwashing operation, the following conditions should exist: (a) acoustically treated ceilings to muffle noise and offer quieter working conditions; (b) anti-vibration mountings which tend to minimize noise as well as reduce wear and tear due to vibration; (c) adequate lighting and ventilation and an exhaust fan to remove vapors; (d) non-porous floors and wall to make cleaning easier; (e) proper arrangement of tables; (f) space for paper wastes and walk-through areas; (g) work flow planned so that employees can handle jobs efficiently. The dishwashing operation should start at a point closest to the point of ultimate use; (h) a minimum of two to three dish racks and three to five clean racks for dishes. A large machine is wasted without adequate table space.

HOSPITAL MANAGEMENT

Vol. 79, February, 1955

Improving your hospital's personnel policies. K. Taylor.—p. 43.
* A basic approach to human relations. E. Planty.—p. 45.
Why gamble on your hiring policy? K. Gass.—p. 46.
* The D.P. an answer to rapid job turnover. J. O. Smigel and E. O. Smigel.—p. 47.
* Insist on comprehensive up-to-date references. G. Wren.—p. 48.

Human Relations. Certain emotional needs are basic in human nature. If these are met by an employer, smooth personnel relations will be promoted and production increased. These needs are: sense of belonging; need for recognition (give credit where due); and need for security (keep employees informed of what is going on).

Solving Employee Turnover. One solution to high employee turnover is to offer bigger wages. However, this is frequently impossible. At the Pinehaven Nursing Home and Sanitarium the problem was solved by hiring displaced persons. They work along with a larger number of native workers who have proved competent and steady. The major characteristic of DP's is that they are dependable. They seldom leave their jobs. Some of the disadvantages, such as language, cliques, and unfamiliarity

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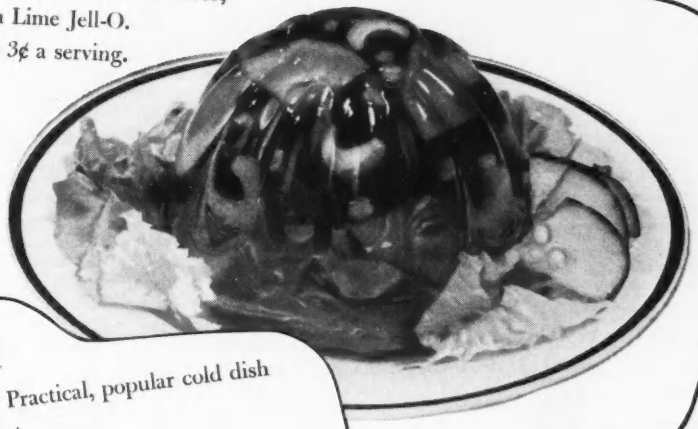

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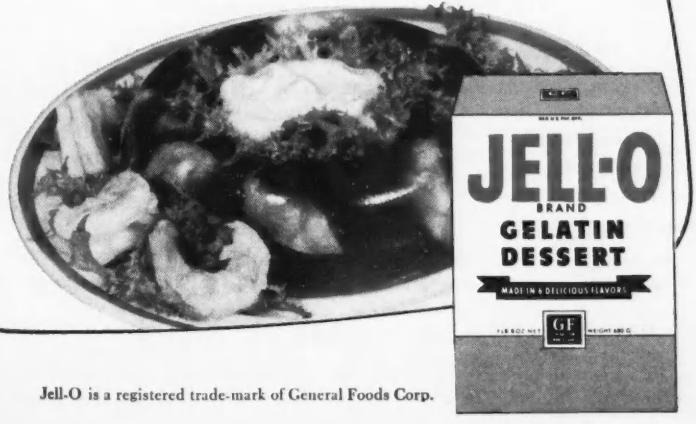

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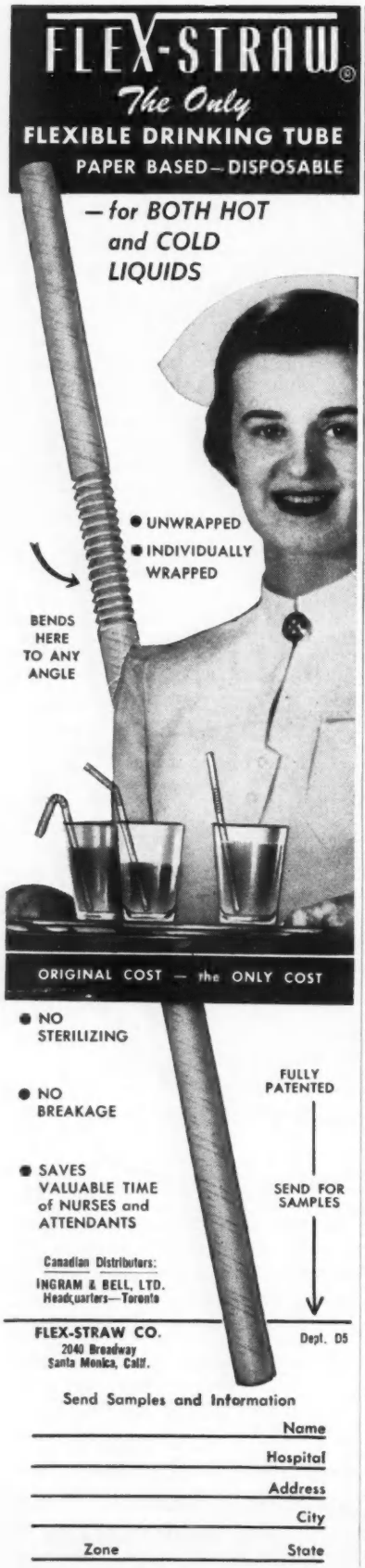


of American work habits, disappear as assimilation takes place.

References. The choice of a good assistant or other person for promotion within the organization is usually safest because such people are known factors. However, not all jobs can be filled from the inside. A potential employee should have held a similar job and should have built up his work record. His references should be honest, frank, complete, up-to-date, confidential, and comprehensive.

HOSPITALS

Vol. 29, March, 1955

* Will the equipment meet the need? The dietitian's criterion.—p. 130.
* Will the equipment meet the need? The architect's contribution. J. W. Hargrave.—p. 131.

Planning a Food Service Department. In planning a new food service unit or remodeling an old one, the dietitian should work in cooperation with the architect. To determine the equipment needed and how much room should be utilized, the dietitian should begin with the planned menu. If the department is new, decisions should be made on the type of menu and cost level. Then a master menu for a month should be made out and, if in a hospital, a meal census should be projected. Process charts showing the movement of product through equipment is the scientific way of determining equipment needs for new or remodeled food service units. These charts will determine the time needed for preparation and space and equipment needed for the preparation of individual items. A summary chart, prepared by the dietitian, would show all menu items, serving portions required, and equipment desired, including size capacity and all attachments.

The architect's role in selection and arrangement of the equipment is a two-fold job: to know the newest and best food equipment available to meet the dietitian's requirements, and to work with the dietitian in studying the simplification of functions to establish the best arrangement of the equipment. In construction of food service departments today there is greater emphasis than ever before on built-in sanitation in the equipment; development and use of more portable food service equipment; use of the modular principle in developing equipment and utensils for food preparation, storage, and service; new systems of cooking and heating food; and use of new metals and alloys. The use of new metals is very important, arising from the desire for corrosion-resistance, damage-resistance, simplification in maintenance, and enforcement of sanitation regulations.

HOTEL MONTHLY

Vol. 63, February, 1955

* Profit possibilities from canned pears.—p. 50

Canned Pears. Achieving variety and a balanced menu is always the problem in food service operations. Often many commonplace, everyday items are overlooked. One of these is pears. Pears make a good menu item because they are simple, can be used in many ways, are popular, and give the operator exact control over every factor affecting the pricing of the dish as served. Canned pears come in three grades—fancy, choice, and standard—and can be had in either No. 10 or No. 2½ cans. They are available the year round and are suitable for breakfast, luncheon, or dinner menus. Several quantity recipes which use pears are given.

INPLANT FOOD MANAGEMENT

Vol. 2, February, 1955

* Chinaware has tradition, acceptance. J. R. MacPherson.—p. 29.

Vol. 2, March, 1955

* Panel seeks hidden losses in receiving room.—p. 12.

Advantages of Chinaware. The industrial cafeteria manager is concerned about tableware that gives the best service and harmonizes with its surroundings. Chinaware is always considered among the various types of tableware because of its tradition and wide acceptance. Factors such as heat-retaining capacity and the maintenance of a sanitary condition are important aspects of tableware, as well as the shape and design in relation to intended use. This is especially important in a cafeteria where tray space and table space must be considered. From a sanitation viewpoint, chinaware is satisfactory because: (a) its smooth, extremely hard surface is easily cleaned of food and bacteria; (b) it has a protective glaze which prevents scratches where filth and bacteria could lodge; (c) its highly vitrified body, fused to a non-porous glaze, prevents the absorption of liquid from food or dishwater; (d) its ability to be heated through makes it quickly self-drying when washed under standard time and temperature conditions; and (e) its ability to resist chemical breakdown or deterioration with time, usage, and exposure to extreme heat and cold. A small amount of care will reward the food service operator with excellent results in long wear.

Hidden Receiving Losses. In response to a reader's question, "How can I prevent shortages caused by leaks in my supplies-receipt system?" three consultants give their views on the subject. All agree that the proper selection of personnel, good training, and the checking of all supplies against invoices at the time of receipt are important factors in cutting the "hidden losses." Each of the panelists tells how a receiving system works at his particular institution. The article contains pointers for improvement of receiving, checking, storing, and careful purchasing.

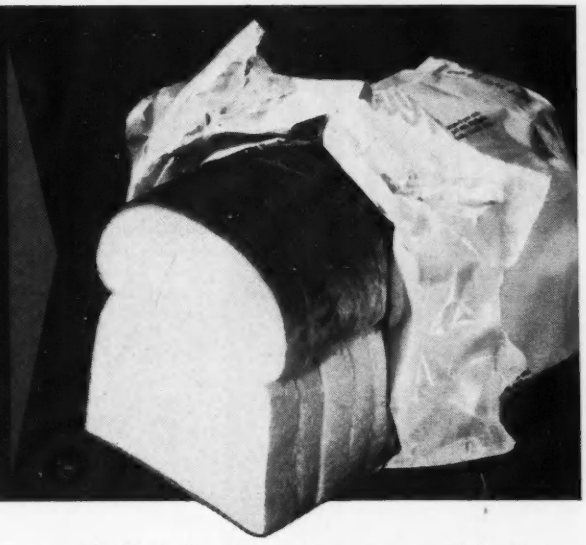
INSTITUTIONAL FEEDING AND HOUSING

Vol. 4, March, 1955

* Mechanized, centralized dishwashing system.—p. 22.
* Trouble shooting fluorescent systems.—p. 25.

Centralized Dishwashing. A mechanized, central dishwashing system surrounded by seven dining rooms has been

Enriched Bread in Dietary Planning



BECAUSE of its nutritional, dietetic, and physiologic values, enriched bread simplifies in many ways the organization of dietaries suited to the special requirements of patients.

FOR THE SURGICAL PATIENT...

The first solid food after surgery is toasted enriched bread, slightly buttered. This practice has become a tradition—almost a ritual—because of the very nature of toast. It is bland, easily digested, and yields little inert residue. Its golden, warm appearance is pleasing to the eye; its mild taste appeals to the palate. Its nutrient energy plays a role in the physiologic and psychologic re-awakening of metabolic processes depressed under the "nothing by mouth" conditions immediately following surgery. With increasing tolerance for food it becomes an important component of the soft diet and later of the therapeutic diet.[1] Its valuable protein, B vitamins, iron, calcium and calories help the patient to regain nutritional efficiency.

FOR THE CONVALESCENT . . .

Enriched bread figures prominently in the dietary regimen in convalescence after acute infections, other serious illness, or trauma.

Supplying 13 grams of high grade protein per 5½ ounces (estimated average daily consumption), enriched bread makes an important contribution to the daily protein need. Its protein, comprising flour, milk, and yeast proteins, functions in the healing of wounds and in the rebuilding of wasted tissues.[2] In addition, 5½ ounces of enriched bread supplies on the average 0.37 mg. of thiamine, 0.23 mg. of riboflavin, 0.34 mg. of niacin, 4.1 mg. of iron, 137 mg. of calcium, and 418 calories.

FOR THE CHRONICALLY ILL...

In the formulation of palatable and nutritious menus for the debilitated, chronically ill, the advantages of enriched bread serve well.

In anorexia, enriched bread or toast stimulates the appetite. It is easily masticated and readily digested, features particularly important for elderly patients. Its favorable textural influence within the alimentary tract[3] promotes good utilization of ingested foods.

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1. The Committee on Dietetics of the Mayo Clinic: Mayo Clinic Diet Manual, ed. 2, Philadelphia, W. B. Saunders Company, 1954.
2. Sherman, H.C.: Chemistry of Food and Nutrition, ed. 8, New York, The Macmillan Co., 1952, pp. 212, 599.
3. Sherman, H.C.: The Nutritional Improvement of Life, New York, Columbia University Press, 1950, p. 133.

The Seal of Acceptance denotes that the nutritional statements made in this advertisement are acceptable to the Council on Foods and Nutrition of the American Medical Association.

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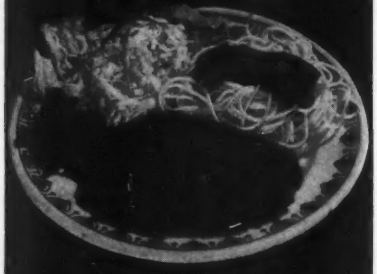

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planned for a new group of dormitory buildings at Michigan State College in East Lansing. A separate central building contains all of the feeding and recreation facilities. Soiled dishes from the dining rooms are deposited at the scraping table by automatic overhead belt conveyors and by student busboys. The busboys do preliminary sorting before placing the soiled dishes on the belt conveyors or dish tables. Scraping is done by one to four men depending upon the work load. This dishwashing system which has been carefully planned, will cut labor costs, and minimize traffic problems, at the same time permitting maximum sanitary standards.

Trouble - Shooting Fluorescent Systems. A checklist of trouble with fluorescent lighting systems is given, together with remedies for the situations. Some of the helpful information includes: (a) causes and cures for short lamp life, (b) humming sound—steady or intermittent, (c) blinking of new lamps, and (d) dark streaks lengthwise of tube.

INSTITUTIONS MAGAZINE

Vol. 36, March, 1955

* Positive way to profit through formula cooking.—p. 6.
* Practical tests for dishwashing compounds. D. E. Anderson.—p. 7.
* Shared supervision makes one equal two.—p. 13.
* Low in calories, high in patron appeal. M. S. Miller.—p. 58.
* Regional specialties. A. Macfarlane.—p. 65.
* Plan efficient hand washing for kitchen utensils. W. H. Haskell.—p. 112.
* "Nature of learning" explained for supervisors of institutions workers.—p. 118.

Profit through Formula Cooking. Formula cooking in its broadest meaning is the use of tools and equipment to aid the human mind and muscle. It has long been recognized by scientific management that the skill of a worker, when implemented by proper tools, increases the quality and quantity output. Formula cooking trains kitchen employees in standardized methods and results in a product of fixed quality. It teaches cooks to be precise and to follow a recipe exactly. This method is widely used in Europe, but the need for it has become apparent only lately in the U. S., because there are fewer well-trained chefs, and often they do not have well-trained assistants. Formula cooking helps to "plan a profit in advance," for it substitutes science for individual judgment and puts control of the food service operation in the hands of the management. It also simplifies menus, cutting price and providing customer satisfaction.

Dishwashing Compounds. Dishwashing compounds used by institutions cannot be judged by the same standards as those used in homes. One reason is that dishes, cups, pots, and pans in an institution usually stand in a soiled condition longer than those at home. Washing solutions in institutions are used to the exhausting point, whereas in the home they are not. Often the question, "Is my dishwashing compound doing the work it should?" is asked. There are simple methods of analysis which will reveal how good a job it is doing, and whether an institution has problems with dishwashing compounds such as soil-loading, inadequate water-softening, suds and stain removal, and also how the compound affects the hands. This article discusses simplified methods of checking dishwashing compounds, describing the different compounds and how they can best be used.

Shared Dietitians. The "shared dietitian" divides her time between two or more small hospitals or other institutions. She is a member of the professional staff at each institution and is responsible for the operation of the dietary department in each place, whether she is there or not. The shared dietitian's responsibilities for supervisor training, purchasing, and setting food standards are discussed. The importance of proper training of supervisors so that authority can be delegated when the dietitian is not on the scene is emphasized.

Low-Calorie Menu Appeal. Low-calorie meals have high patron appeal in restaurants. A restaurant that is noted for good food, as all restaurants would like to be, plans the low-calorie recipes and meals for its everyday customers, rather than customers such as the housewife, who eat out only occasionally and want a fancy meal. Although low-calorie specials might mean extra employees, most restaurants successfully meet the demand of the calorie counters by combining low-calorie foods from their regular à la carte menus. The combinations must be tasty, attractive, and interesting, and special care must be taken in cooking the vegetables (an important part of any low-calorie diet). Suggestions for successful low-calorie combinations are given in the article.

Regional Specialties. Popular regional dishes which reflect America's food patterns from the East to the West Coast represent the combinations of food and food preparation of many races and levels of society. They are part of American culture and part of American heritage, and today foods of racial groups—Dutch, German, Italian, Spanish, Indian, and French—have become a fundamental part of our national eating habits. Many of these groups, because of their isolation, were forced to use products at hand, combining them by cooking methods brought from the land of their birth. In this way new cooking habits and new types of recipes developed. These in turn were carried from one part of the country to another. This article presents some of the regional specialties from New England, the Pennsylvania Dutch, the Middle West, the Plains, the Southwest, and the West. In each section, the history and background of the particular food culture is discussed. Illustrated instructions on how to prepare some of the most famous of the regional recipes are also included.

Hand Washing of Utensils. The washing and sanitizing of eating and drinking utensils is naturally an important part of institutional sanitation, yet it is often improperly handled. A satisfactory way to meet the sanitary requirements in manual dishwashing is

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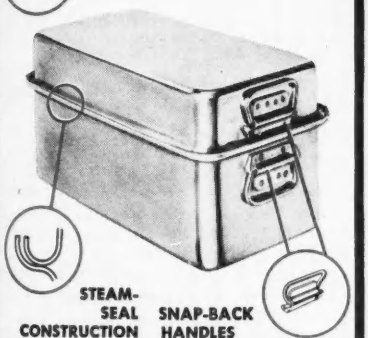

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Caloric Value per slice	17
Weight of average slice	4.5 grams

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the three-vat method preceded by a prerinse of the utensils. A drain shelf is used after the final sanitizing vat. Prerinsing is performed for several reasons, the most important being that it keeps the wash water as clean as possible. The first vat, or the wash water should remain at about 120°F. Its volume should be known so the exact amount of detergent required will be known. Friction is important in washing utensils, and all soil should be removed, preferably with a firm bristle brush. The second vat serves to remove the wash water, and the third vat—the sanitizing operation—is where the utensils receive their final treatment. For this step either hot water or chemical sanitization, both of which are satisfactory, if properly applied, may be used. The use of a drain board is important especially if a sanitizing solution has been used, for it allows the solution to run off. The final step in dishwashing is storage. Utensils should not be stored in areas where exposure to dust, dirt, flies, sneezing, or coughing is possible.

Nature of Learning. Those responsible for training of employees need to understand the nature of learning and how it can be made easier. Learning is a natural process in which a person acquires habits, either good or bad. In industrial instruction the objective is to teach the employee desirable habits. Habits result from practice and from "doing," and a learner must start with the correct method and practice it without deviation until he has formed a strong habit. The instructor must give the learner a clear picture of what is to be accomplished and how. A simple technique which instructors can use has four steps: (a) preparation, in which the instructor creates in the learner a desire to learn the specific task, habit, or habits; (b) presentation, in which a clear pattern is set for the learner to follow, and a clear understanding of the task to be done is given; (c) application, that is, practice by the learner under supervision; (d) test, in which a more or less formal check-up of the learner's knowledge and ability to perform is given. To use this method, an instructor must make a breakdown of the steps in the job and decide which are most important in order to learn the task.

MODERN HOSPITAL

Vol. 84, March, 1955

* Good training makes good cooks. C. Bishop.—p. 122.

Good Training Makes Good Cooks. The Food Service Training School of the N. Y. State Department of Mental Hygiene in Poughkeepsie was established in 1948 to develop higher standards of food preparation and service in the state institutions. Emphasis of the training is on good nutrition and the students learn efficiency in planning menus within the institution budget and to employ the best safety measures in the prevention of food-borne diseases. The course is divided into three one-week periods. The first week consists of a combination of classroom and demonstration work on new and standard procedures in all phases of food operation. The second week is spent in the laboratory preparing foods, using standardized formulas and assisting in testing new formulas, and the third week the group is divided, each section working in one of the hospital's kitchens under the supervision of a member of the school staff and the head cook of the kitchen. The students are graded on their work and must have an average of 75 per cent to earn a certificate. Stress is put on personal hygiene as well as correct principles and procedures of food service.

PERSONNEL JOURNAL

Vol. 33, March, 1955

* What employees want to know. W. K. Kirchner and J. Belenker.—p. 378.

What Employees Want to Know. Nine types of information were presented to employees in the Minneapolis-St. Paul area to find out: (a) what information employees want and (b) if management knows what employees want. Presented to the personnel was information about: (a) company's financial position, (b) company products, (c) company history, (d) management people, (e) company employees, (f) company services, (g) how wages are figured, (h) work rules, and (i) American business in general. Employees were asked to rank the three subjects in which they were most interested, and the three in which they were least interested. Management people then told how they thought their employees would vote. The most desired information was that about the company product and the least desired was that about management people. In general, employees were mainly interested in things that concerned them directly.

PRACTICAL HOME ECONOMICS

Vol. 33, March, 1955

* Using teaching aids in a foods class.—p. 16.

Teaching Aids in a Foods Class. An interview with a New York home economics teacher reveals that teaching aids provided by food manufacturers are a great help in the classroom. The flow of current information provided by leading food companies keeps teenagers and the home economics instructors in contact with the latest developments and improvements in the food service industry. Leaflets and booklets of various types provide supplementary information augmenting basic data included in cook books. The special type of information service which encourages teachers to ask special questions of the manufacturer also is a great help to the teachers.

RESTAURANT MANAGEMENT

Vol. 76, February, 1955

* Your rights and obligations under the state labor relations laws. G. P. Schmidt.—p. 44.
* How a thorough checking system insures accurate inventory and cost control. D. Markstein.—p. 52.

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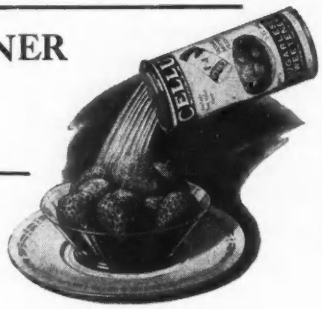
BERKELEY, CALIFORNIA
CHICAGO, ILLINOIS

SUGARLESS SWEETENER

Calorie-Free

Pours Like Powdered Sugar



Cellu Sugarless Sweetner sweetens, but adds no food value. Consists of saccharin and salt in vegetable gum. Easy to pour over fruits, cereals, etc. Comes in handy 3-oz. shaker container or 20-oz. hospital size.

Easy to Make* DIETETIC ICE CREAM *with

CELLU FREEZETTE

Make your own sugar-free ice cream with Cellu Freezette. Package makes about 7 pints. Chocolate or Vanilla flavors.

Send for Catalog Describing Over 100 Cellu Foods

LOW CALORIE

CELLU *Dietary Foods*

CHICAGO DIETETIC SUPPLY HOUSE *Inc.*
1750 West Van Buren Street Chicago 12, Illinois

for Tasty, Juicy hamburgers*

make 'em the Automatic way!

There's a better way to prepare hamburgers, fish cakes, etc., quickly and conveniently and economically and that's the Automatic Food Shaper way.

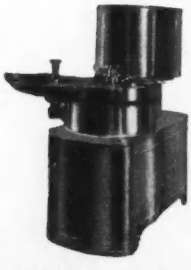
Here's why! Only the Automatic Food Shaper handles the food mixture gently and never bruises, crushes or mashes the food. This results in really superior tasting, fluffier, juicier food patties. And, best of all, expensive, unsanitary hand shaping is completely eliminated.

Remember, too, Automatic Food Shapers maintain rigid cost control with uniform portions. When desired, the portion size can be adjusted by merely turning a knob!

Write for literature that describes our three electrically driven models available with capacities of hundreds or even thousands of patties an hour—all with one operator!

Visit our Booth #762, Navy Pier, Chicago Nat'l Restaurant Ass'n Convention, May 9–13

* or fish cakes, hash patties, veal or lamb patties, crab cakes or any other food mixture that can be served or portioned in patty form!



Model DA—Capacity: 2400 patties per hour

AUTOMATIC FOOD SHAPING CO., INC.

58 New Street New York, New York

* Look before you lease. C. V. Gallaher.—p. 56.
* Soups that serve many purposes. M. L. Casteen.—p. 60.

Labor Relations Laws. A summary of the various labor relations laws is given. It is stated that the employer has no right to interfere with employees organizing, with their right to collective bargaining, or picketing as long as there isn't violence, disorderly conduct, misrepresentation, or fraud.

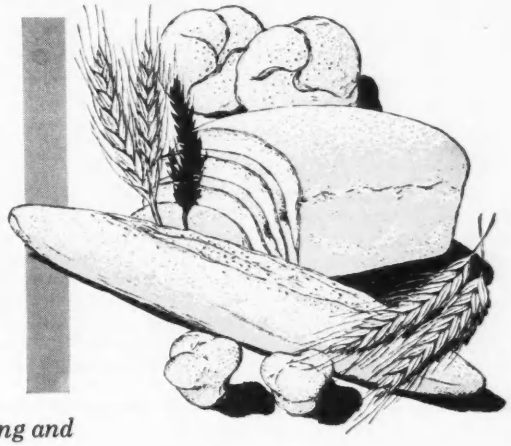
Look Before You Lease. Restaurant operators are warned to study the fine print in leases, even with fixed-rental leases. Often leases express the rent only partly as a fixed amount, and a tenant may be obligating himself for additional indefinite occupancy charges under various guises. In some extreme cases, these extra costs may even exceed the amount of rent called for in a lease. Usually such additional occupancy charges fall into two categories: (a) payment of property taxes, including future increases; and (b) payment of part or all of the building's repairs and maintenance. An operator in renting must take into consideration the character of the neighborhood which might indicate a decline in the value of the location even as property taxes rise, and the age of the building from the standpoint of repair and maintenance costs—whether these expenses are apt to be ordinary or abnormal. A checklist for use in a physical examination of the property is given.

Thorough Checking for Accurate Control. The comptroller of a New Orleans restaurant developed an accurate system of food control and cost accounting for his particular establishment. The system allows him to tell within a few minutes' time, the exact cost of a meal on a given date. The system starts at the moment of delivery when the inventory clerk checks the contents of the carton against the invoice, where in the event of shortages, damaged goods, or mistakes, an adjustment can be made quickly and easily. Invoices are given to the accountant after the food is receipted and stored. Each morning the kitchen requisitions staples, and at the end of the following day, the requisition is sent to the accounting office for filing. At the end of each month the purchases, as evidenced by the invoices, are added to the previous closing month's inventory, and from this the requisition totals are deducted to give a closing figure for stock on hand. The system is successful mainly because the inventories are carefully controlled. Allowances for possible human error are made and overages and shortages are allowed within ½ of 1%. When they vary more than this, the management investigates.

Soups. Keep stock fresh by keeping the temperature at barely simmering. If it is necessary to keep it under refrigeration, it should be cooled quickly by placing the container in a sink of cold running water. After a stock pot has been in use for five to six days, drain the liquid off and discard the remaining material. Thoroughly wash and sterilize the kettle. Be sure to standardize soup recipes.

ADVERTISEMENT

FLOUR FOR MAN'S BREAD*



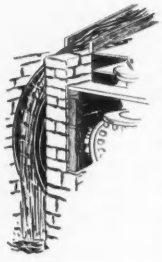
A Brief History of Milling and Baking by SCIENCE WRITER

CHAPTER VI. *Waterwheels and Millstones.*

THE STORY SO FAR

In preceding chapters we learned how men changed from hunting animals to cultivating grains for their food; how grain culture and milling improved as new grains and tools developed; how milling and baking left the home and became business; how the bread wheats and the arts of milling and baking spread across the world.

NEW SOURCE OF POWER



Larger, more efficient millstones were developed as it was discovered that they could be turned by a source of power which exerted much more force than that supplied by men or animals. This new source was gravity in the form of swiftly-running water which was transmitted to grinding stones through waterwheels.

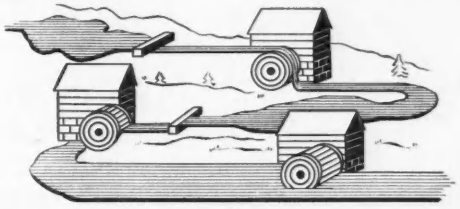
MANY TYPES OF WATERWHEELS

In Roman times the architect Vitruvius described a waterwheel which powered a mill to grind grain.

Over the centuries waterwheels were improved. Gearing between the waterwheel and the millstones was introduced. Waterfalls and rapids were used as mill sites. In fact, cities often grew up around these places as Minneapolis around the Falls of St. Anthony. Mill dams were constructed to harness the power of the tides. Experimentation with the dressing of millstones brought about better milling. As the principles of hydraulics came to be understood, the direct drive mill gave way to more efficient types. Auxiliary drives were developed for hoisting the grain to the hopper and later for powering the sieves which bolted the meal.

THE MOST EFFICIENT WATERWHEEL

For almost two thousand years there was argument among millers about the most efficient type of waterwheel: overshot, breast or undershot. In an overshot wheel the water meets the wheel's paddles at the wheel's top. In a breast wheel it meets the paddles midway in the wheel. And in an undershot wheel the water meets the paddles at the bottom. As time passed, the millwrights found that the best arrangement of the waterwheel varied with conditions of the stream. Then early in the 19th Century came the development of the turbine



which was found to be 87% efficient. The water rotated the wheel by impulse on entering and by reaction on leaving.

TODAY'S NUTRITION

Turbines evolved from waterwheels; cities grew from mill sites; and small, local millers and bakers expanded into nationwide organizations. As the business of milling grew so did the knowledge of wheat's nutritive values. Millers and bakers found that they could give the public the fine white flour and bread which it demanded and still supply important vitamins and minerals which are unavoidably lost during milling. They do this through enrichment which is the simple process of adding vitamins B_1, B_2, niacin plus iron, and sometimes calcium to the flour as it is being milled. Result: better nutrition for countless millions of people.

This is one of a series of articles which is being published in professional nutrition and dietetic journals, and which will be widely distributed for educational purposes. Reprints of this and all other chapters are available without charge. Write to the Vitamin Division, Hoffmann-La Roche Inc., Nutley 10, New Jersey. In Canada: Hoffmann-La Roche Ltd., 286 St. Paul Street, West; Montreal, Quebec.

*This is the title of a definitive history of milling by John Storck and Walter Dorwin Teague, published by the University of Minnesota Press at Minneapolis and copyrighted by the University of Minnesota. It is used with permission as a source of material for this series of advertisements.

The next chapter titled: "The Winds and The Mills" will be published soon.

Enriched with vitamins and iron for better nutrition

ADVERTISEMENT

Briefs on the 38th Annual Meeting

Location—St. Louis, "the city surrounded by the United States"

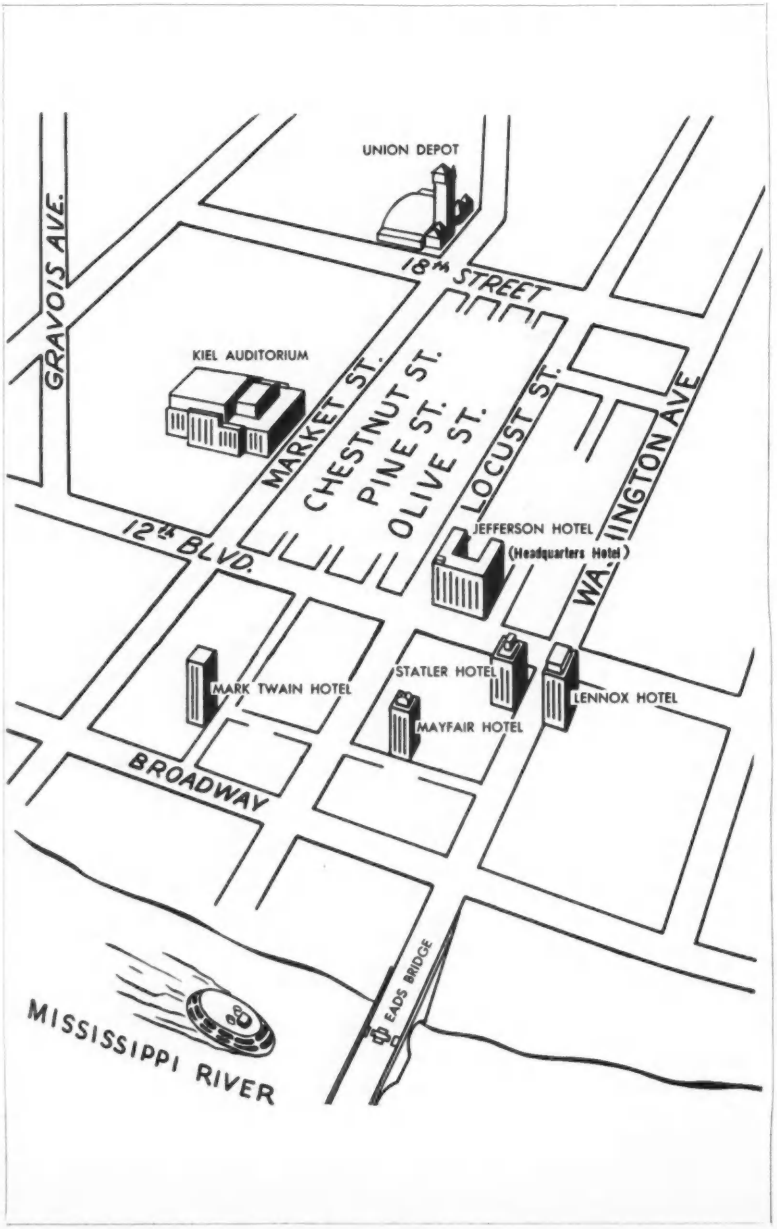
Wheels have begun to turn in preparation for the largest and best meeting in A.D.A.'s history. A vigorous, exploratory mood has taken possession of the planners who are weighing traditional convention customs against innovations. The latter give evidence of winning.

A NEW TREND

Broad subjects, of interest to members engaged in all fields related to dietetics and nutrition, will be found in greater numbers on this year's program. Rather than full-length sessions on topics such as school lunch programs, mental health, and so on, which have appeal to special groups, the presentations will embody material of value to everyone.

The predicament of being required to choose one out of two or three equally attractive sessions will be lessened considerably.

Supplementary conferences will be held Wednesday and Thursday afternoons. Authorities in a wide variety of fields will serve as leaders in discussions of topics which are not covered in detail during the large sessions. Some of the subjects for conferences are: TV techniques, the clinic patient, mental health, school lunch programs.



AN EXPERIMENT

In recent years the attendance at the Exhibitors' Dinner has risen steadily to the rather overwhelming figure of 1192 in Philadelphia. Gratifying though this popularity might be, accommodating such numbers of persons has placed the *maîtres d'hotel* in a quandary.

Questionnaires were sent to the exhibitors to give them an opportunity to express their wishes concerning a substitute event. As many as 83 per cent were in favor of a change in plans.

The Local Arrangements Committee is currently weighing ideas for the social evening. The decision of the Committee will be announced later.

INTERMISSIONS INTRODUCED

To allow members greater freedom to visit exhibits at Kiel Auditorium, a plan has been evolved for morning and afternoon breaks between sessions. In general, a minimum of 45 minutes will be scheduled.

STATE OFFICERS' MEETINGS

A change to Thursday afternoon from Monday is slated for the state officers' meeting. The locale will be the Auditorium instead of the headquarters hotel. Members are cordially invited to attend.

WELCOMING RECEPTION

Members of the "show me state" will entertain all the early arrivals on Monday evening. This reception, about which details will be given later, is the only event on Monday night's calendar.

HOUSE OF DELEGATES

The first House of Delegates meeting will take place on Monday, October 17, at the Jefferson Hotel. The second session, on Thursday, will be held at the Auditorium.

DIETETIC INTERNSHIP DIRECTORS

The Hotel Statler will be the site of the dietetic internship directors' meetings—all day Saturday, October 15, and Sunday afternoon.

Watch this column each month for Annual Meeting news.

Application for Housing Accommodations

THE AMERICAN DIETETIC ASSOCIATION

St. Louis, Mo. • October 18–21, 1955

For your convenience in making hotel reservations for the coming meeting of THE AMERICAN DIETETIC ASSOCIATION on October 18–21, 1955 in St. Louis, hotels and their rates are listed below. Use the form at the bottom of this page, indicating your first, second and third choice. Because of the limited number of single rooms available, you will stand a much better chance of securing accommodations of your choice if your request calls for rooms to be occupied by two or more persons. All reservations must be cleared through the Housing Bureau. ALL REQUESTS FOR RESERVATIONS MUST GIVE DEFINITE DATE AND HOUR OF ARRIVAL AS WELL AS DEFINITE DATE AND APPROXIMATE HOUR OF DEPARTURE, ALSO NAMES AND ADDRESSES OF ALL PERSONS WHO WILL OCCUPY RESERVATIONS REQUESTED *MUST* BE INCLUDED.

Hotel	For one person	For two persons		2-Room Suites
		Double Bed	Twin Beds	Parlor & Bedroom
JEFFERSON*	6.00– 9.00	9.00–12.00	11.00–15.50	25.00–39.50
LENNOX	5.00–10.00	6.50–10.50	10.00–12.50	18.00 & Up
MARK TWAIN	4.00– 7.50	5.50– 9.00	8.00– 9.00	12.50 & Up
MAYFAIR	5.00–10.00	6.50–12.00	8.50–12.00	14.50 & Up
STATLER	5.00–11.00	7.50–14.00	9.00–18.00	30.50–32.00

In the event that the hotel room rate structure is changed prior to the above convention these rates will be changed accordingly.

* Headquarters

ALL RESERVATIONS MUST BE RECEIVED PRIOR TO: September 18, 1955

Hotels Convention Reservation Bureau, A.D.A.
Room 406—911 Locust St.
St. Louis 1, Mo.

Please reserve the following accommodations for: THE AMERICAN DIETETIC ASSOCIATION Convention in St. Louis, Missouri on October 18–21, 1955

Single Room ..... Double Bedded Room ..... Twin Bedded Room .....
2 Room Suite ..... Other Type of Room .....
Rate: From $ ..... to $ .....

First Choice Hotel .....
Second Choice Hotel .....
Third Choice Hotel .....

Arriving at Hotel (date) ..... hour ..... A. M. ..... P. M. Leaving (date) .....
hour ..... A. M. ..... P. M.

THE NAME OF EACH HOTEL GUEST MUST BE LISTED. Therefore, please include the names of *both* persons for *each* double room or twin bedded room requested. Names and addresses of all persons for whom you are requesting reservations and who will occupy the rooms asked for:

.....
.....
.....
.....

(Individual Requesting Reservations)
Name .....

Address .....

City and State .....

If the hotels of your choice are unable to accept your reservation the Hotels Convention Reservation Bureau will make as good a reservation as possible elsewhere provided all hotel rooms available have not already been taken.

News Notes

Dietetians at Atomic Test. On April 26, the first Civil Defense Field Exercise to be conducted in connection with a nuclear explosion was scheduled (weather permitting) at the Atomic Proving Grounds, Yucca Flats, Nevada. For this test, a replica was constructed of a typical residential American town and a variety of industrial products were tested for purpose of Civil Defense planning. This was actually a history-making event, since it was the first time civilians participated in an atomic test from a forward position

During "Operation Cue," a sixty-person feeding force, under the auspices of the Federal Civil Defense Administration, working through the National Advisory Committee on Emergency Feeding, served food to fifteen hundred observers with the atomic blast as the background.

Elsie Wells Russell, Los Angeles, and Hazel Fehlman, Boulder, Colorado, attended as A.D.A. participants in this demonstration. Serving as alternate participants were Sybil Christensen and Ann Savage, both from Salt Lake City.

During the hours of darkness while waiting in the observation area for the shot, observers were served doughnuts and coffee by one team of the feeding crew. Other members of the feeding group with their vehicles and equipment were with the Civil Defense field exercise forces in forward positions. After the shot, they withdrew from the forward positions to the observation area where they set up their mobile equipment and prepared breakfast for the observers.

The day after the shot, the team moved into the firing area and, using salvage material from test houses, improvised feeding facilities to prepare lunch for observers and field staff.

Seven feeding teams—each comprised of from seven to nine persons—were responsible for the operation. There were six serving lines, two operating from each of three trucks equipped with fuel, ranges, and serving tables.—*Dorothy Bovee, A.D.A. Civil Defense Chairman, and Rosemary Lodde, A.D.A. Representative on the National Advisory Committee on Emergency Feeding.*

Civil Defense Foods Advisory Committee. The National Academy of Sciences—National Research Council, at the request of the Food and Drug Administration, has established the FDA Civil Defense Foods Advisory Committee. The committee will study the vulnerability of the food processing and warehousing industries to open attack or sabotage by biologic, chemical, or radiologic agents, and will also be concerned with methods and facilities for sanitizing or decontaminating food plants, equipment, and products in a civil defense emergency. The committee is composed principally of food industries men who are serving as experts in their fields, not as representatives of their companies or of institutions. Roy C. Newton, Vice President for Research, Swift & Company, Chicago, is Chairman.

Plentiful Foods MONTHLY LIST

Featured foods in the "plentifuls" list for May will be *broilers and fryers* and *raisins*. The entire list is as follows:

Protein foods

Beef
Broilers and fryers
Halibut, frozen fillets
Milk and other dairy products
Pork
Tuna, canned

Other foods

Grapefruit, fresh and processed
Lard
Oranges, fresh and processed
Potatoes
Prunes, small size
Raisins
Rice

Meetings. The *Canadian Dietetic Association* is meeting in Toronto, June 27–29. This will be the 20th annual meeting of the Canadian group.

From June 28 through July 1, the *American Home Economics Association* will meet in Minneapolis. With the theme, "Home Economics—Its Potential for Greater Service," the meeting will emphasize the expansion of the profession and its contribution both to the community and to the individual.

The biennial conclave of *Omicron Nu* will be held on the campus of Michigan State College, East Lansing, June 24 through 26, the week-end immediately preceding the American Home Economics convention in Minneapolis. The central theme for discussion will be "The Power of an Idea."

Correction. In the list of nominations for A.D.A. published in the March issue, the JOURNAL incorrectly reported that the nominee for President-Elect, Lucille M. Refshauge, Director of Dietetics, Hartford Hospital, Hartford, Connecticut, has been a dietetic intern at St. Marys Hospital, Rochester, Minnesota.

Miss Refshauge actually was a student dietitian at the Kahler Corporation, Mayo Clinic, Rochester, Minnesota.

NU Director for Hospital Administration Program. Dr. Charles U. Letourneau has been appointed Director of the Program in Hospital Administration at Northwestern University, Chicago. He will succeed Dr. Malcolm T. MacEachern, who will continue his association with the program as Professor of Hospital Administration with the title of Honorary Director. Dr. MacEachern was the founder of the program.

Dr. Letourneau has been Associate Director of the program since February 1953, having graduated from the program in 1951. Since his graduation he has been on the staff of the American Hospital

Recent A.D.A. Committee Appointments

Committee on Postgraduate Internships and Residencies

EVA N. YLVISAKER, *Chairman*
Head Dietitian
The Children's Hospital
Cincinnati 29, Ohio

ERCEL S. EPPRIGHT, Ph.D.
Head, Department of Food and Nutrition
Iowa State College
Ames, Iowa

CORA E. KUSNER
Director of Dietetics
Colorado State Hospital
Pueblo, Colorado

FRANCES MACKINNON
School of Public Health
University of North Carolina
Chapel Hill, North Carolina

E. INISTORE SIMMS
Director of Dietetics
Youngstown Hospital Association
Youngstown, Ohio

SISTER MARY VICTOR, Director
Department of Nutrition
St. Marys Hospital
Rochester, Minnesota

Membership Committee

DOROTHEA BARTLETT, Chief Dietitian
Mary Hitchcock Memorial Hospital
Hanover, New Hampshire

A.D.A. Representative, National Advisory Committee on Emergency Feeding

ROSEMARY L. LODDE
1301—15th St., N. W.
Washington 5, D. C.

Committee on Health Education, National Health Council
and
Committee on State and Local Health Councils, National Health Council

MARIAN C. JONES
New York State Department of Mental Hygiene
Albany, New York

For every age—every day...

THE "CITRUS SNACK"

CHILDHOOD—to help correct and prevent vitamin C deficiencies reported in an alarmingly high percentage of grade school youngsters.

ADOLESCENCE—to give C-minus teen-agers the right kind of between-meals pick-up to effect C-plus nutrition.

MOTHERHOOD

—to help guard against anemia, hemorrhage and miscarriage in pregnancy, and meet the doubled C requirement during lactation.

OBESITY—to combat hypoglycemia, help control appetite and provide high-level C intake.

IN OLD AGE—to provide maximal C nutrition during this important period.

FLORIDA CITRUS COMMISSION
Lakeland, Florida

FLORIDA *Citrus*

ORANGES • GRAPEFRUIT • TANGERINES

Association in various capacities. He holds a medical degree and a law degree from McGill University.

TV-Radio Workshop. Peabody College, and radio and television station WSM, Nashville, Tennessee, have announced plans for a second annual summer workshop, July 18 to 29. The workshop is designed to instruct teachers in the use of television and radio for educational purposes. The course will feature lectures, symposiums, demonstrations, and actual production by the students. It will also explore the fields of program planning, public relations, psychology of children's programs, and the use of music, art, and literature in production as well. Lecturers will include nationally known experts in educational television as well as Peabody and WSM and WSM-TV personnel.

Further information may be obtained from Dr. Felix Robb, Dean of Instruction, Peabody College, Nashville.

Food Distribution Research Recommended. Research to improve the efficiency of distribution of foods was recommended by the Marketing Advisory Committee of the U.S.D.A. at its March meeting. This Committee was formed by the Secretary of Agriculture last fall to review research, service, and educational work of the U.S.D.A. under the Research and Marketing Act of 1946. The Committee specifically recommended the following subjects for early consideration in new or expanded research:

(a) Improved handling practices and facilities for meat operations in warehouses and branch plants.

(b) Improved wholesale and retail handling practices for produce and frozen food.

(c) Methods of increasing efficiency and productivity in grocery warehouse operations.

(d) Studies of price differentials at successive stages of food distribution.

(e) Evaluation of present retail-package sizes from the standpoint of meeting average family needs.

By prevention of spoilage and deterioration in quality of foods, the Committee felt that an important means of increasing efficiency of distribution, especially for fresh produce, could be effected.

Low-Sodium Meals Booklet. The Nutrition Foundation, Inc., has recently taken over the publication of the booklet, "Planning Low Sodium Diets," originally prepared by the Newton, Massachusetts, Health Department. Included in the booklet are sections on Seasonings and Spices; Milk, Eggs, and Beverages; Meat, Fish, and Poultry; Vegetables; Fruits; Bread and Its Exchanges; Fats, Desserts; and Recipes. With the booklet are provided three folders outlining meal plans and sample menus for low-sodium diets at the 200-mg., 400-mg., and 800-mg. levels. The new edition, revised to include pertinent literature references to research on low-sodium diets, may be obtained from The Nutrition Foundation, Inc., Chrysler Building, New York 17, for 50 cents a copy.

Government Publications. A new U.S.D.A. release is a booklet titled "More and Better Foods from Today's Pay Check," which compares the changes in foods in production on the farm, in processing and distribution, and in the home during the last thirty years. Through the use of simple illustrations, it tells the story of the quality and quantity of foods we eat today. It is numbered Agriculture Information Bulletin No. 138, and may be obtained from the Government Printing Office for 15 cents a copy.

The January 1955 issue of the *Business Service Bulletin* (published by the Small Business Administration of the Department of Commerce) was devoted to a bibliography on "Commercial Cooking, Soda Fountain, and Food Service Equipment." In it are listed not only government publications related to this field, but pamphlets and books published by nongovernmental sources, and references to articles published in business magazines. Separate sections are devoted to enumerating directories which are available and to trade associations in the field. Copies of this report may be obtained from the Washington office or any one of the forty-four field offices maintained by the Small Business Administration.

Yes, it's still hot!!
thanks to . . .
J&J fast-service
FOOD TRAY TRUCKS
designed to speed tray service from floor diet kitchens, heated tray trucks, subveyor stations, and special dumb-waiters.
specifications
Model 1359, left, has stainless steel shelves, aluminum bronze chassis. Also available in polished stainless steel throughout, or in aluminum bronze finish throughout.
Length Overall 25" Height Overall 42"
Width Overall 21" Shelf Clearance 7"
Shelf Size 16½" x 24"
. . . the dietician's perfect answer to the age-old problem of transporting food to the patient and having it hot and appetizing on arrival. 4-tray unit combines mobility with stability . . . the two essential requirements in hot food delivery. Four double ball-bearing swivel casters with 5" ball-bearing rubber-tired wheels facilitate fluid motion, yet prevent chance of upset accidents or uneven motion that might slop or spill liquids. Swept-back handle makes it easy to maneuver without kicking the unit or bumping it with the knee.
These serviceable units nest when not in use to conserve valuable space in corridors.
Jarvis AND Jarvis
PALMER, MASSACHUSETTS
7JJ58

If you could look into homes

all over the country . . .

time and again
you'd see
this dinnerware

Millions of pieces of Boontonware have been sold for home use alone. And for the same reasons that make it even more of an ideal buy for food service on a large scale.

Boontonware makes the most of Melmac's famous break-resistant qualities. There's practically no breakage loss.

Boontonware's design rests comfortably between traditional and modern. Another reason for its mass appeal.

Boontonware's full selection of colors — solid pastels and deep tones — bring new life to food service and surroundings. Related colors, for perfect blending and mixing.

Boontonware is a complete line. Plates, bowls, cups and service dishes for every need.

You can be double-sure when you specify Boontonware. Sure of cutting operating costs. Sure of using the dinnerware that enjoys wide-spread acceptance in the best of homes.

Eight Colors to Mix or Match

POWDER BLUE	GOLDEN YELLOW
CRANBERRY RED	COPPER ROSE
SEA FOAM GREEN	STONE GRAY
FOREST GREEN	TAWNY BUFF

See your regular Supply House or write to us for the name of your nearest Dealer.

Boontonware complies with CS 173–50, the heavy-duty melamine dinnerware specification as developed by the trade and issued by U. S. Department of Commerce, and conforms with the simplified practice recommendations of the American Hospital Association.

Boontonware
fine dinnerware fashioned of MELMAC®

BOONTON MOLDING COMPANY, BOONTON, N. J.

Symposium on Nutrition. The Nashville Academy of Medicine, the School of Medicine, Vanderbilt University, and the Council on Foods and Nutrition of the American Medical Association, on April 4 sponsored a symposium on "Some Inorganic Elements in Human Nutrition." The symposium was held at Vanderbilt University in Nashville. The program was as follows:

"Iodine Metabolism in Endemic Goiter"—Edwin B. Astwood, Tufts College Medical School, Boston
"Metabolic Functions of Zinc"—B. L. Vallee, Peter Bent Brigham Hospital, Boston
"Iron Metabolism and Requirements of the Human"—Carl V. Moore, Washington University, St. Louis
"Copper Metabolism in the Human"—Kelly H. Gubler, University of Utah, Salt Lake City
"Magnesium Deficiency Syndrome in Man"—Edmund B. Flink, VA Hospital, Minneapolis
"Potassium Deficiency in the Infant"—Daniel C. Darrow, Children's Mercy Hospital, Kansas City, Missouri

Illinois Tri-Home Economics Conference. March 26 marked the Tri-Home Economics Conference in Chicago, sponsored jointly by the Illinois Home Economics Association, Illinois Dietetic Association, and the Chicago Home Economists in Business. The conference was planned to inform guidance people (of whom about three hundred attended) and school administrators in Illinois of the opportunities for careers in home economics. Speakers described the fields of: extension work, nutrition and dietetics, business, teaching, and homemaking. Representing the nutritionists and dietitians was Beulah Hunzicker, Director of Dietetics, Presbyterian Hospital, Chicago.

Hospital Work as a Career. The Catholic Hospital Association has published a twelve-page leaflet designed for high school distribution to arouse interest in hospital careers. Titled "The Job I Really Wanted!" the leaflet is written in a narrative form and discusses the various types of jobs found in hospitals. The leaflets are to be distributed by hospitals, and the cooperation of all hospitals is solicited. The leaflets are also to be purchased and distributed by them to local high schools. Cost of the leaflet has been kept to a minimum (5 cents for single copies with quantity discounts available) so that hospitals can afford adequate distribution in their areas.

Louisiana Health Centennial. The summer of 1955 will mark the one hundredth anniversary of the Louisiana State Board of Health, the oldest state board of health in the U. S. The centennial is being celebrated at a joint meeting of the Louisiana Public Health Association and the Southern Branch, American Public Health Association, in New Orleans, May 10 to 13. Speakers from many different organizations dealing with health from all over the country will be featured. The Louisiana Board of Health was organized on June 13, 1855, mainly because Louisiana and New Orleans suffered devastating epidemics, the most dreaded of which was yellow fever. Among the Board's many accomplishments, are some famous firsts: first health council, first state laboratory, first health train, first division of child hygiene, first Negro educator, and first interdepartmental committee.

Army Personnel. The following changes in dietetic personnel of the woman's Medical Specialist Corps of the Army have been announced:

PROMOTIONS

2nd Lieutenant to 1st Lieutenant

Mary P. Dwyer
Arleen Havsgaard

RESERVE OFFICERS ASSIGNED TO ACTIVE DUTY

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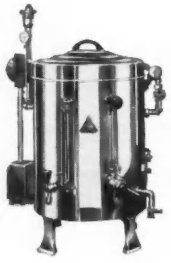

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Meat...

Dietary Cholesterol and Vascular Sclerosis

Recent studies reaffirm the "hypothesis that atherosclerosis is fundamentally a metabolic disease subject to important dietary influences"[1] and do much to refute contentions that foods containing cholesterol should be avoided in general diets.

Arterial disease resembling that in human subjects was produced in Cebus monkeys fed diets high in cholesterol and low in sulfur amino acids. Within 2 to 8 weeks after initiation of the regimen serum concentration of cholesterol rose to levels of 300 to 800 mg. per 100 ml. "The hypercholesterolemia could be largely prevented by feeding 1 gram per day of dl-methionine or l-cystine as supplements to the diet." Also, the elevated cholesterol levels "could be restored to normal by feeding 1 gram of dl-methionine but only partially restored by 0.5 gram of l-cystine daily."

According to the investigators, the "vascular lesions were in the ascending aorta but extended from the valves of the left ventricle to the proximal portions of the carotid and femoral arteries . . . The aortic lesions were chiefly characterized by the presence of lipid-laden phagocytes and increase in collagen and elastic fibers. The lipids were in part cholesterol derivatives."

Cholesterol, an essential metabolite produced in intermediary metabolism,[2] is biosynthesized from dietary protein, fat, and carbohydrate.[3] Normally, its synthesis is exquisitely controlled to insure adequacy as well as to protect against an oversupply.[4] Furthermore, considerable evidence indicates that an increased cholesterol intake is not an etiologic factor in alleged aberrations of cholesterol metabolism such as atherosclerosis.

In widely variable amounts, cholesterol occurs in foods of animal origin—meat, poultry, fish and marine foods, eggs, milk products—all foods of great nutritive value.[3] Present knowledge in no way warrants alteration in the customary consumption of these foods because of their contained cholesterol.

Skeletal muscle of beef, lamb, pork, and veal provides but small amounts of cholesterol, approximately 0.06 Gm. per 100 Gm. moist weight of meat.[5] Since atherosclerosis may interfere sharply with normal nutrition, the patient should consume diets rich in protein foods (such as meat), vitamins, and fruit.[6] In addition to high quality protein, meat supplies valuable amounts of needed B vitamins and essential minerals.

1. Mann, G. V.; Andrus, S. B.; McNally, A., and Stare, F. J.: Experimental Atherosclerosis in Cebus Monkeys, J. Exper. Med. *98*:195, 1953.
2. Okey, R.: Use of Food Cholesterol in the Animal Body; Relation of Other Dietary Constituents, J. Am. Dietet. A. *30*:231 (Mar.) 1954.
3. McLester, J. S., and Darby, W. J.: Nutrition and Diet in Health and Disease, ed. 6, Philadelphia, W. B. Saunders Company, 1952, pp. 517-518.
4. Editorial: The Biosynthesis of Cholesterol, J.A.M.A. *152*:1435 (Aug. 8) 1953.
5. Okey, R.: Cholesterol Content of Food, J. Am. Dietet. A. *21*:341 (June) 1945.
6. Wright, I. S.: Arteriosclerosis, in Stieglitz, E. J.: Geriatric Medicine, Medical Care of Later Maturity, ed. 3, Philadelphia, J. B. Lippincott Company, 1954, chap. 28, p. 413.

The Seal of Acceptance denotes that the nutritional statements made in this advertisement are acceptable to the Council on Foods and Nutrition of the American Medical Association.

ACCEPTED COUNCIL ON FOODS AND NUTRITION AMERICAN MEDICAL ASSOCIATION

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News of State Associations

Alabama Dietetic Association. On April 1 and 2, the Alabama Dietetic Association met in Auburn for its annual spring meeting. Committee reports were heard, and the affairs of the national Association were discussed by Jane Hartman, Food Service Director, Maryland Department of Health, Baltimore. Other features of the program included:

"Dietitians—Are We Dynamic or Doomed?"—Jane Hartman

"Research Being Done on Experimental Animals at Alabama Polytechnic Institute"—W. D. Salmonn, Head, Department of Animal Husbandry, Alabama Polytechnic Institute

"Cardiac Disease and Hypertension"—Dr. Maurice J. Abrows, Specialist, Montgomery

Connecticut Dietetic Association. In November, a Second Food Service Institute for Chronic and Convalescent Hospitals was jointly sponsored by the Community Nutrition and Diet Therapy Sections of the Connecticut Dietetic Association and the Connecticut Department of Health. Discussions were presented on: planning adequate meals at low cost, economical food purchasing, modifications of the normal diet, and individual problems.

First recipient of the Helen Johnson Phaneuf Scholarship, which is offered by the Connecticut Dietetic and Home Economics Associations, was Dorothy M. Rowley of Waterbury, a student at the University of Connecticut.

Kentucky Dietetic Association. The 21st annual meeting of the Kentucky Dietetic Association was held in Lexington on March 25 and 26. The program included an opening session featuring a talk by Dr. Harris Isbell, U. S. Public Health Service Narcotic Hospital, Lexington, whose topic was "Alcoholism as a World Problem." The banquet address on "Education in Reality" was presented by Dr. Mary E. Sweeny of Lexington.

Other features of the program were:

"Building Blocks for Hemoglobin Formation"—Dr. Douglas Ruff, Lexington Clinic

"Emergency Feeding"—Dorothy Bovee, Nutrition Consultant, American Red Cross, Washington

"Weight Control Programs"—Dr. James M. Hundley, Chief of Biochemistry and Metabolic Research, National Institutes of Health, Bethesda, Maryland

"Management Problems"—Martha Nelson Lewis, Ohio State University Hospital, Columbus

New Hampshire Dietetic Association. On March 8, the New Hampshire Dietetic Association met in Concord. J. Carrol McDonald, History Department, St. Paul's School, spoke on "The Far Eastern Situation."

Officers of the New Hampshire Association for 1954-55 are: President, Ellen Matson, New Ipswich; President-Elect, Dr. Anna M. Light, University of New Hampshire, Durham; Treasurer, Ruth Cutter, Director of School Lunches, New Hampshire Department of Education, Concord; Secretary, Verna Payson, Supervisor of Home Economics, New Hampshire Department of Education, Concord.

New Jersey Dietetic Association. The Professional Education Section of the New Jersey Dietetic Association sponsored a conference in April on "Teaching Nutrition and Diet Therapy to Student Nurses." Head dietitians and teaching dietitians in all New Jersey hospitals were invited.

Three "Home Economics Career Days," jointly sponsored by the New Jersey Dietetic and Home Economics Associations, have been conducted this year, with more than 250 high school students attending.

The Civil Defense Committee of the New Jersey Association is preparing a "Technical Manual of Dietary Services" for use in emergency mass feeding operations.

Members of the *Central New Jersey Dietetic Association* were brought up to date in March when Professor Edna Sostman, Home Economics Department, New Jersey College for Women, spoke on "Current Research in Nutrition." The group's April meeting featured Dr. Marcus Rosenblum, Veterans Administration, who spoke on "Psychological Aspects of Feeding People."

★

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Canco has issued a free guide to good eating for patients on a diabetic, low-sodium, or low-calorie diet. This unique booklet called *So You're on a Diet* contains a wealth of helpful information for your dieting patients.

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ADA 5-55

New York State Dietetic Association. On April 27, 28, and 29, the New York State Dietetic Association met in New York City. The program featured:

The Meanings of Attitudes
- "The Place of Attitudes Today"—Lawrence K. Frank, Ph.D., Formerly Director, Caroline Zachery Institute of Human Development
- "Patients' Attitudes in Clinic Interviews"—Charlotte M. Young, Ph.D., Cornell University, Ithaca
- "Parental Attitudes in Prenatal Clinic"—Margaret Hogan, R.N., Sloan Hospital for Women, Presbyterian Medical Center, New York City
- "The Team Approach in the Interpretation of Attitudes"—Emma Mike, Babies Hospital, Presbyterian Medical Center

Recent Developments in Student Nurse Education
- "Nutrition in the Baccalaureate Program in Nursing"—Agnes Gelinas, R.N., Skidmore College, New York City
- "Nutrition for Nurses—A Dynamic Approach"—Evelyn Ebenstein, Teaching Dietitian, Lenox Hill Hospital, New York City

Current Management of Recurrent Renal Lithiasis
- "Etiology, Diagnosis, Treatment"—George C. Nagamatsu, M.D., and Roland J. Kohen, M.D., VA Hospital, Bronx
- "Specific Dietary Treatment"—Hilda Katz, Clinic Dietitian, VA Hospital, Bronx

The Dietitian as an Executive
- "Executive Training Needs of the Dietitian"—Capt. Doris Parker, Valley Forge Army Hospital, Phoenixville, Pennsylvania
- "Democratic Approach to Administration"—William J. Ronan, Ph.D., School of Public Administration and Social Service, New York University
- "The Executive as an Educator"—Ernest O. Melby, Ph.D., School of Education, New York University

A course on "Human Relations in Supervision" was held this winter for members of the *Buffalo Dietetic Association* by Michael Montmore, Assisistant Personnel Officer, Buffalo VA Hospital. Subjects discussed have included: history and background of successful human relations, the emotional needs concept, individual differences among employees, the supervisor as an instructor, personnel evaluation, employee counseling, and possibilities of affecting changes in attitudes and behavior of individual workers.

The *Rochester Dietetic Association* in January enjoyed a talk by Dr. Albert Sullivan, University of Rochester Medical Center, on "Psychological Aspects of Nutrition of Children." In February, Milton Bidwell, Director of Environmental Sanitation, Rochester, spoke to the group on "Care of Food Before and After Preparation," and also reported on the employee training program on sanitation in Rochester.

Pennsylvania Dietetic Association. The 22nd annual meeting of the Pennsylvania Dietetic Association took place April 27, 28, and 29 at State College. Outstanding features of the program were a speech on "Our Heritage in Nutrition" by E. Neige Todhunter, Ph.D., Dean, School of Home Economics, University of Alabama, Tuscaloosa; and a panel discussion on "Where Are We Going in Foods and Nutrition?"

Texas Dietetic Association. On February 18 and 19, dietitians from a five-state area attended a seminar on therapeutic dietetics conducted at the University of Texas Southwestern Medical School, Dallas. Latest trends in all phases of therapeutic dietetics were discussed. Members of the Texas Dietetic Association presided at all meetings.

At the March meeting of the *San Antonio Dietetic Association*, Capt. Elinor Pearson, Brooke Army Medical Center, discussed "Metabolic Response to Burns." Work at Brooke in its research on the care and treatment of severe burns was described.

Washington State Dietetic Association. Spokane was the scene of the Washington State Dietetic Association meeting on April 29 and 30. The program included:

"Newest Developments in Feeding and Nutrition of Infants and Children"—Dr. Herbet Woodcock

"Diet in the Treatment of Nephritis"—Dr. Roy T. Pearson

"Personnel Relations"—Dr. Robert

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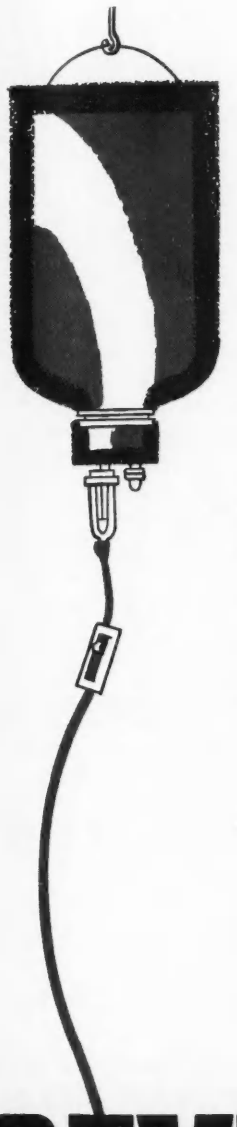

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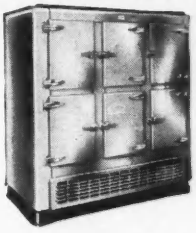

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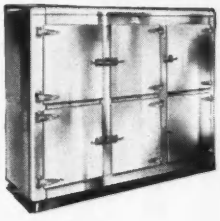

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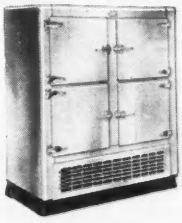

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Association Activities

State Dietetic Meetings. A.D.A. representatives to attend additional state dietetic association meetings are:

April 28, 29—Doris Odle, Missouri and Kansas Dietetic Associations, Kansas City, Missouri
May 2, 3—May Reynolds, North Dakota Dietetic Association, Bismarck
May 23, 24—Doris Odle, Arkansas Dietetic Association, Little Rock.

National Food Patterns and Recipes. Dr. Helen S. Mitchell, Chairman of the 1954 project, "Selected List of References on National Food Patterns and Recipes," requests that any additions or corrections in this mimeographed material be sent to her with the possibility of the bibliography appearing in booklet form for wider distribution. The mimeographed material of sixteen pages is now available from Headquarters office at 50 cents a copy.

Revising Your Diet Manual? In the event your hospital or dietetic association is revising its diet manual, you will want to have at hand:

Handbook of Diet Therapy. Revised 1952. By Dorothea F. Turner (for A.D.A.). Chicago: University of Chicago Press. Price $3.50.

Materials for Teaching Diabetic Patients (prepared by the American Diabetes Association; Diabetes Branch, U.S. Public Health Service, and A.D.A.) Send inquiries about availability to Headquarters Office.

"Meal Planning with Exchange Lists" (booklet)

"Diabetic Diet Card for Physicians"

"Meal Plans" (No. 1, 2, 3, 4, 5, and 6)

"Use of Diabetic Diet Exchange Lists." By Elizabeth Caso. JOURNAL OF THE AMERICAN DIETETIC ASSOCIATION, July, 1953. Reprint—5 cents

"A Guide for the Preparation of Diet Manuals." By Doris Johnson, Ph.D. JOURNAL OF THE AMERICAN DIETETIC ASSOCIATION, October, 1954. Reprint—10 cents

"Developing New Diet Manuals." By Lorraine Weng. JOURNAL OF THE AMERICAN DIETETIC ASSOCIATION, October, 1954. Reprint—15 cents

"Planning the Sodium-Restricted Diet." By Corinne Robinson. JOURNAL OF THE AMERICAN DIETETIC ASSOCIATION, January, 1955. Reprint—15 cents

"Selective Menus for Therapeutic Diets." By Evelyn Pearson. JOURNAL OF THE AMERICAN DIETETIC ASSOCIATION, December, 1954. Reprint—5 cents

"Dietary Nomenclature." By Corinne Robinson. JOURNAL OF THE AMERICAN DIETETIC ASSOCIATION, July, 1952. Reprint—10 cents

The following booklets, all available from the National Academy of Sciences—National Research Council, 2101 Constitution Avenue, N.W., Washington, D. C.:

Therapeutic Nutrition (Publ. 234), 1952. Price $1.

Sodium-Restricted Diets (Pub. 325), 1954. Price $1.

Recommended Dietary Allowances, Revised 1953 (Pub. 302), 1953. Price 25 cents.

New A.D.A. Exhibits. A new, lightweight exhibit featuring low calorie diets has been created. Members may borrow it for use at health fairs, public health meetings, state fairs, and so on. Its theme is "You Can Lose Weight Safely and Pleasantly." Colorful illustrations are accompanied by captions which urge the viewer to consult his physician and to avoid faddism. Another caption carries the admonition: "Cut *down*, but don't cut out foods." Colorful pictures of foods which should be eaten each day contribute to the attractiveness of the display. Members who borrow the exhibit are responsible for shipping charges.

Two new sets of captions, to be available soon, will lend greater flexibility to the use of the A.D.A. Kodachrome slides. The subjects are: "Life as a Hospital Dietitian" and "The Shared Dietitian." The only charge for using the slides will be the cost of postage. These themes have been developed to fill requests for exhibits appropriate for state and regional hospital association meetings, as well as joint meetings of

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dietetic and hospital associations. The use of "Admatic" type or automatic projectors will permit continuous showing of the slides. They can, of course, also be used in the conventional type of projector.

Exhibits with Allied Groups. "An Adequate Low-Calorie Diet with Adaptations" was the exhibit shown at the *American Academy of General Practice* meeting in Los Angeles, March 28 through 31. Members of the Los Angeles Dietetic Association represented the A.D.A., with Dr. Jessie Obert as Chairman.

Katherine Vatz, Chairman, and members of the Chicago Dietetic Association presented the A.D.A. exhibit, "Be a Dietitian," at the *American Personnel and Guidance Association* convention in Chicago, April 3 through 7.

Civil Defense. A Federal Civil Defense meeting of Region 2 (Delaware, Maryland, Pennsylvania, Ohio, West Virginia, District of Columbia, and Kentucky) was held in Philadelphia, March 29. Emma McCormick represented our Association.

Womanpower. Marion Floyd Ackerman represented A.D.A. at a national conference on the "Effective Use of Womanpower," sponsored by the U.S. Department of Labor. Alice K. Leopold, Assistant for Women's Affairs to the Secretary of Labor, explained in announcing the meeting that "women are becoming increasingly important in the development of our country's industry, in scientific research, in the education field, and in social sciences. We think there is a bright new future for women who want to work, so we are bringing together experts in their fields to help guide these women."

The meeting, held March 10 and 11 in Washington, D. C., included such speakers as Dr. Roland Rennee, President, Montana State College; Brig. Gen. David Sarnoff, Chairman, Radio Corporation of America; Dr. Ann Pannel, President, Sweet Briar College; Gertrude Michelson, Manager, Labor Relations Department, R. H. Macy & Company; and Dr. Mirra Komarovsky, Professor of Sociology, Barnard College.

More than five hundred delegates attended the meeting.

News of Products and Services

The Procter & Gamble Company has announced a plan to sponsor two new scholarship programs, which will provide two hundred four-year undergraduate scholarships at twenty-five to thirty privately endowed colleges and universities and forty four-year scholarships at women's institutions. Each scholarship will provide full tuition for four years, an allowance for books and supplies, and an unrestricted additional grant of $500 annually to the institution. All grants offer unrestricted assistance. The institutions themselves will administer the scholarships, selecting recipients on the basis of their own standards for academic achievement and the students' financial need. In addition, the Procter & Gamble fund is making grants to special educational funds, such as the United Negro College Fund and the National Fund for Medical Education. Announcement of participating colleges and universities under the new program will be made by the company soon. Scholarships will be placed on the basis of the following criteria: (a) two-thirds of the scholarships will be in the area of liberal arts and one-third will be technical scholarships; (b) institutions supported to a considerable degree by federal, state, or city funds will be ineligible; and (c) the institutions selected will be those accredited private colleges or universities from which Procter & Gamble and its subsidiaries have drawn the largest number of its present personnel.

The Vitamin Division of *Hoffmann-La-Roche Inc.* was represented throughout the month of March in a display in the main lobby of the Department of Commerce Building in Washington, D. C. The U. S. Patent Office arranged, with the cooperation of a number of leading industrial firms, an unusual array of scientific exhibits showing how the American patent system has contributed to the public welfare. One of the central exhibits was that of Hoffmann-LaRoche Inc., which showed "The A-B-C of Vitamins." Stretching the entire depth of the lobby, the display was divided into several panels which traced the genesis of vitamins, showed how they came to be produced by the ton, and demonstrated their use in food enrichment and pharmaceutical products for the prevention and cure of nutritional disease.

A new beef steak that can be served five different ways has been introduced by *Pfaelzer Brothers, Inc.* The beef steak is portioned uniformly oblong or round in 2-, 3-, 4-, 5-, or 6-oz. sizes and can be served as (a) barbecued beef steak on a bun; (b) grilled luncheon beef steak; (c) open-face beef steak sandwich plate; (d) Swiss beef steak; or (e) country-fried beef steak. The steaks are sold in 10-lb. cartons.

General Foods recently put on the institutional market a new Apple Jell-O. Company representatives are currently offering operators special back-bar strips to build business for the product. Institutional users can obtain quantity recipes for apple Jell-O salad from the Institutional Food Service Department of General Foods.

Wyandotte Chemicals Corporation has introduced a new Electronic Solution Controller—an electronic unit which continuously indicates dishwashing solution concentration by colored lights. The controller can be remotely mounted from the dishwashing machine.

Downyflake Baking Mix Division, Doughnut Corporation of America now has five new mixes on the market: brownie, chocolate cake, golden brown cake, health muffins, and buttermilk pancakes.